the OIL AND GAS JOURNAL

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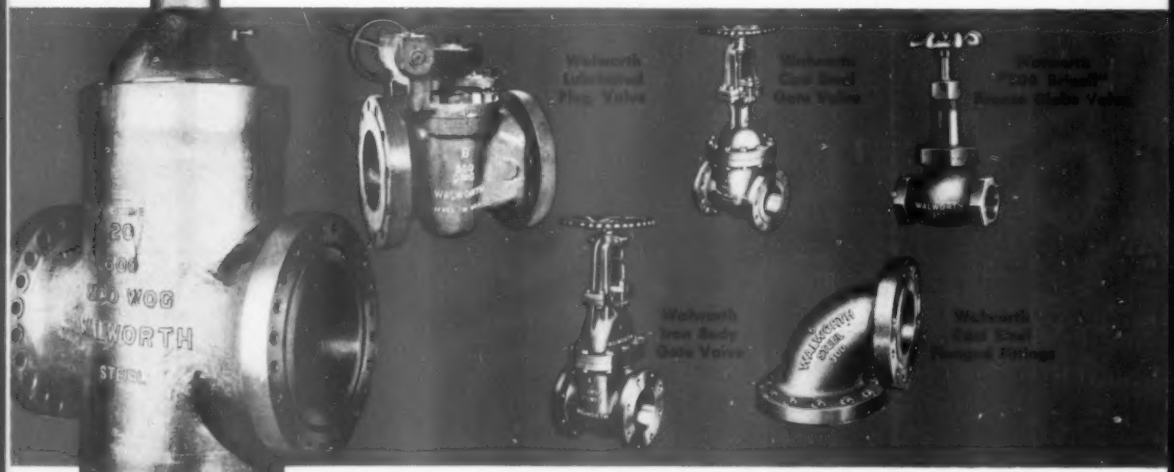

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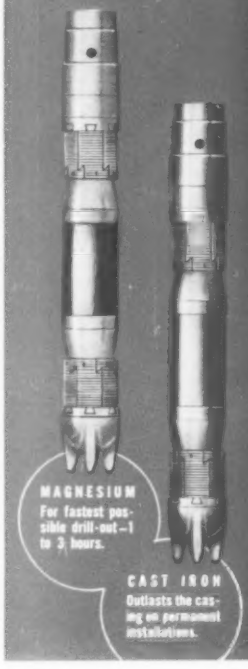

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THE OIL AND GAS
JOURNAL
Vol. 51, No. 29

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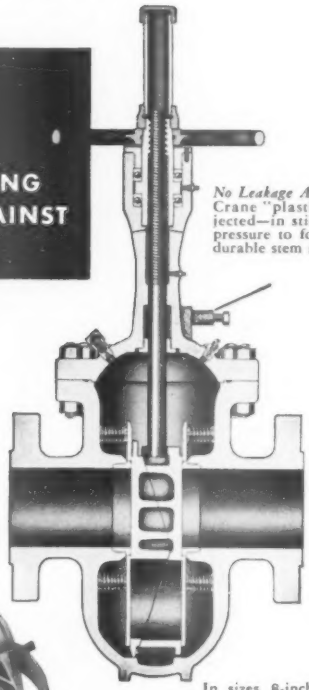

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Here's a hose that can drill under high rock and gas pressures, that your crew can treat rough, that will keep your rig on the job with a minimum of hose trouble.

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Oil in the mud will not cause swelling or rotting of tube. Also abrasion resisting.

Saves waiting

B. F. Goodrich Highflex rotary drilling hose with exclusive Permalock couplings is available at leading supply houses in the major drilling areas. However, should your local supplier be temporarily out of stock when you call, you can get the BFG hose you need any time—day or night—from one of these B. F. Goodrich warehouses: Dallas, Houston, Odessa, Oklahoma City, and Tulsa. *The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.*

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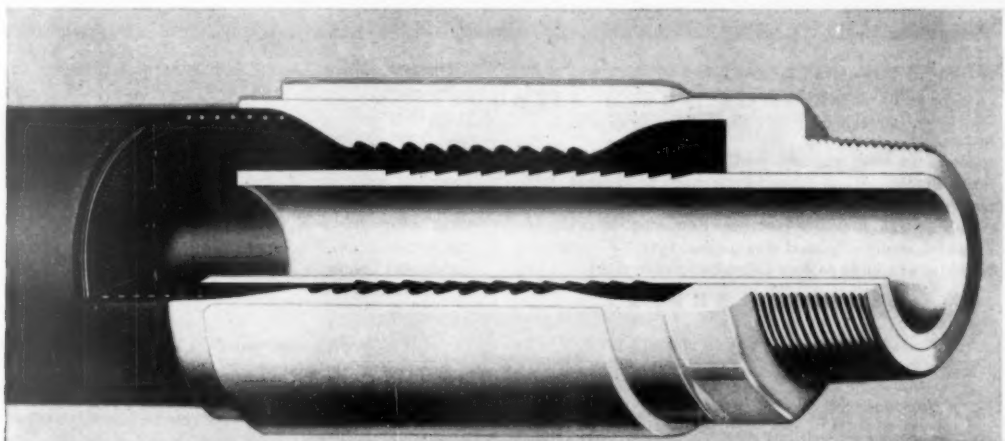

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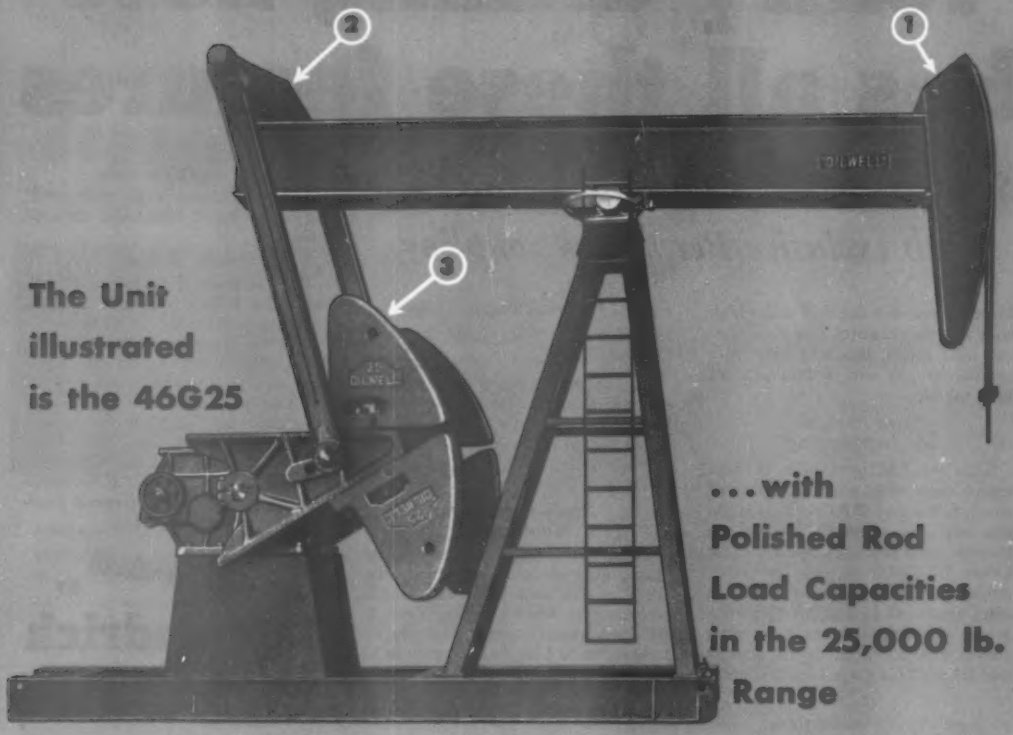

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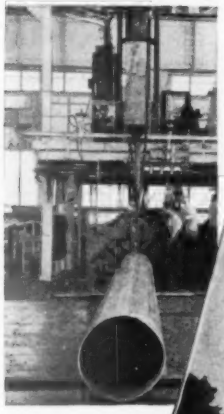

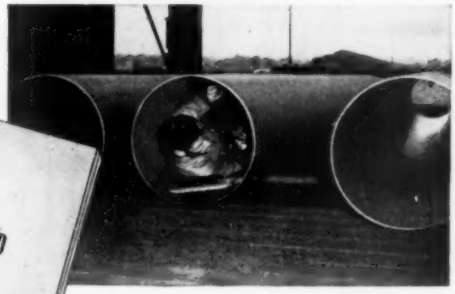

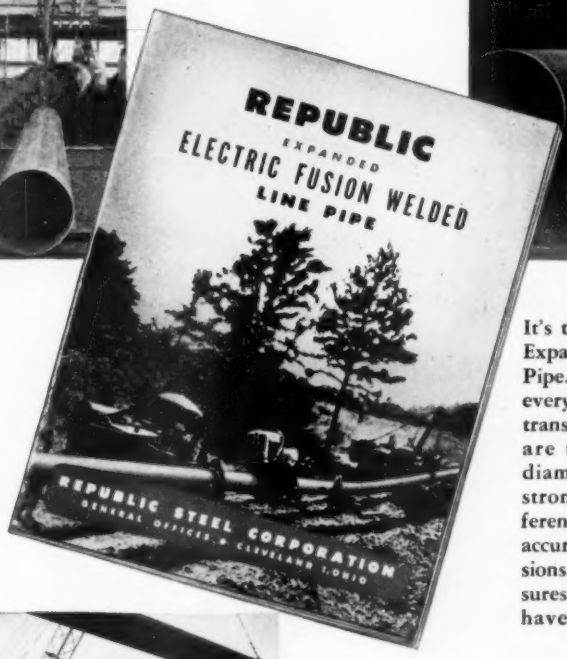

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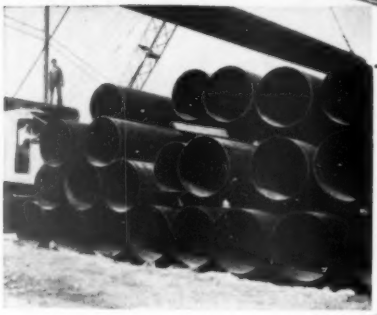

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Please send me free booklet 574, "Republic Expanded Electric Fusion Welded Line Pipe."

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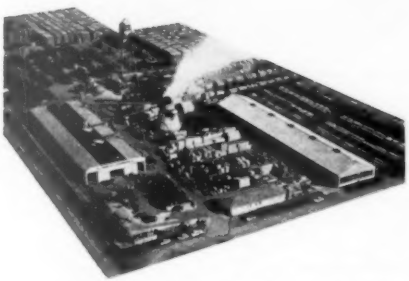

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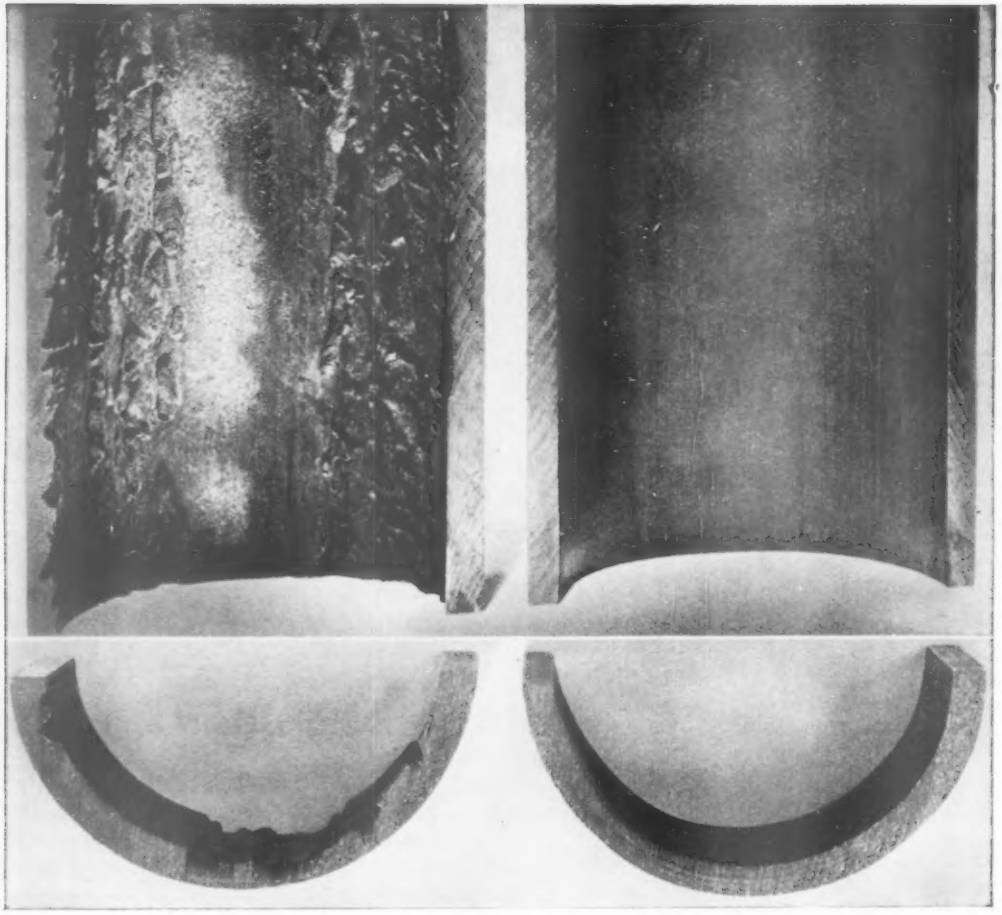

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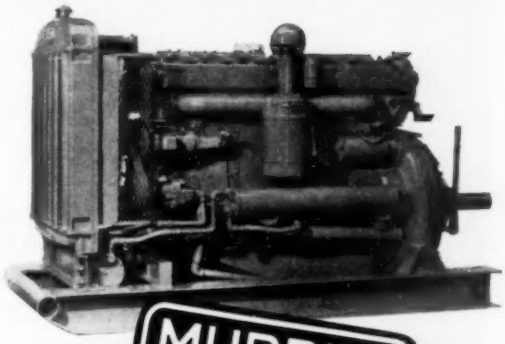

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You get *dependable delivery* in the western two-thirds of the United States when you order Kaiser Steel line pipe. Kaiser Steel owns and operates all its facilities, thus can control every phase of production in order to meet its delivery schedules.

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Electric Resistance and Fusion Weld—Plain End	8⅝" to 20" O.D.	Up to 40'	.188" to .500"	Napa, Calif.—Basalt-Kaiser
Electric Resistance Weld—Plain End	5⅛" to 12¾" O.D.	Up to 55'	.188" to .375"	Fontana, Calif.
Electric Fusion Weld—Expanded—Plain End	22" to 30" O.D.	Up to 40'	.188" to .500"	Napa, Calif.—Basalt-Kaiser

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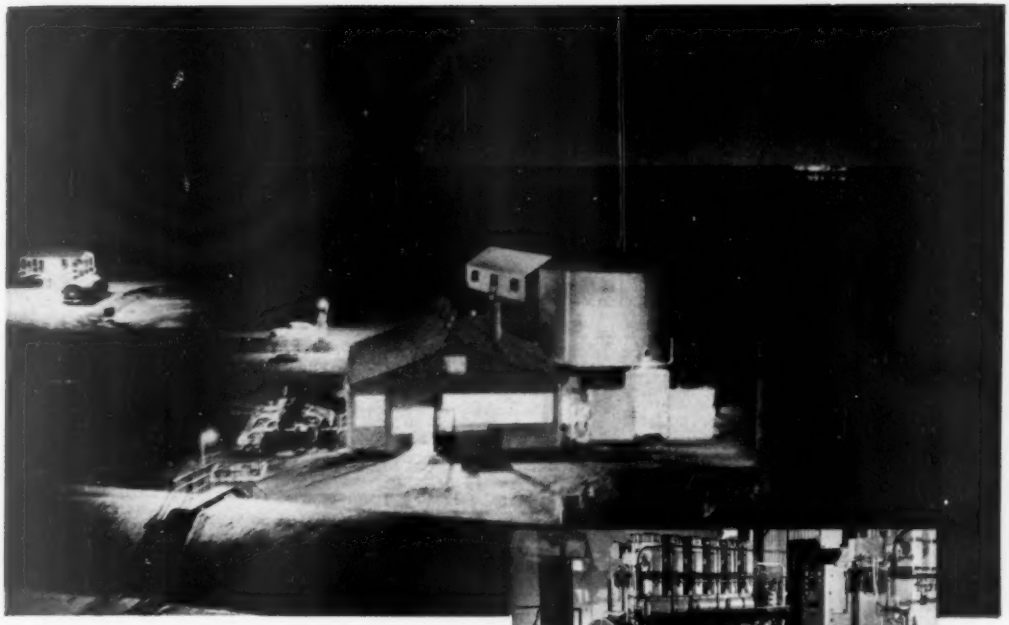

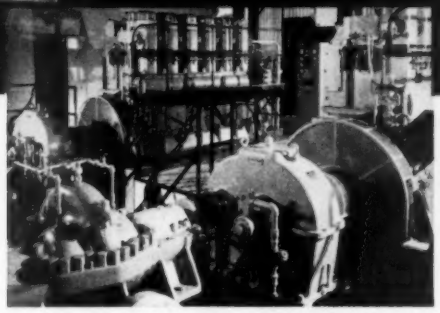

POWER—NIGHT OR DAY

ENTERPRISE Pipe Line Diesels cut tanker loading time and costs at Union Oil Ventura Pumping Station

Pumping crude from tanks to tankers calls for power that's ready when you need it—*night or day*. The intermittent use of power required for this fast moving operation demands *sure starting* and *continuous pumping* on *short notice*. The ability of these diesels to handle a fluctuating load increases pump efficiency and capacity. At Ventura, as with other similar ENTERPRISE installations, this means *more oil pumped faster* and shorter turn-around-time for the tankers. These important operating characteristics are not found in other pumping methods.

Two Enterprise DSG-6 Diesels, rated 465 HP at 450 RPM, furnish all the power for pumping an average 12,000 bbls. of crude per hour shore-to-ship, through 4,280 ft. of 20" cement coated line.

ECONOMY *PLUS* EFFICIENCY WITH ENTERPRISE DIESELS

- **Fuel flexibility**—Engines operate efficiently on standard diesel fuel, heavy fuel or dual-fuel.
- **Handle fluctuating loads** through a wide engine speed range for top pump efficiency regardless of viscosity changes.
- **Minimum plant investment**—more power in less floor space with compact ENTERPRISE power.
- **Low personnel requirements** for supervision, operation and maintenance.
- **Fully automatic operation**—wherever required or desired.
- **Remote location**—there are no power interruptions with ENTERPRISE Diesels.
- **Service and parts** are available within hours to the most remote locations.

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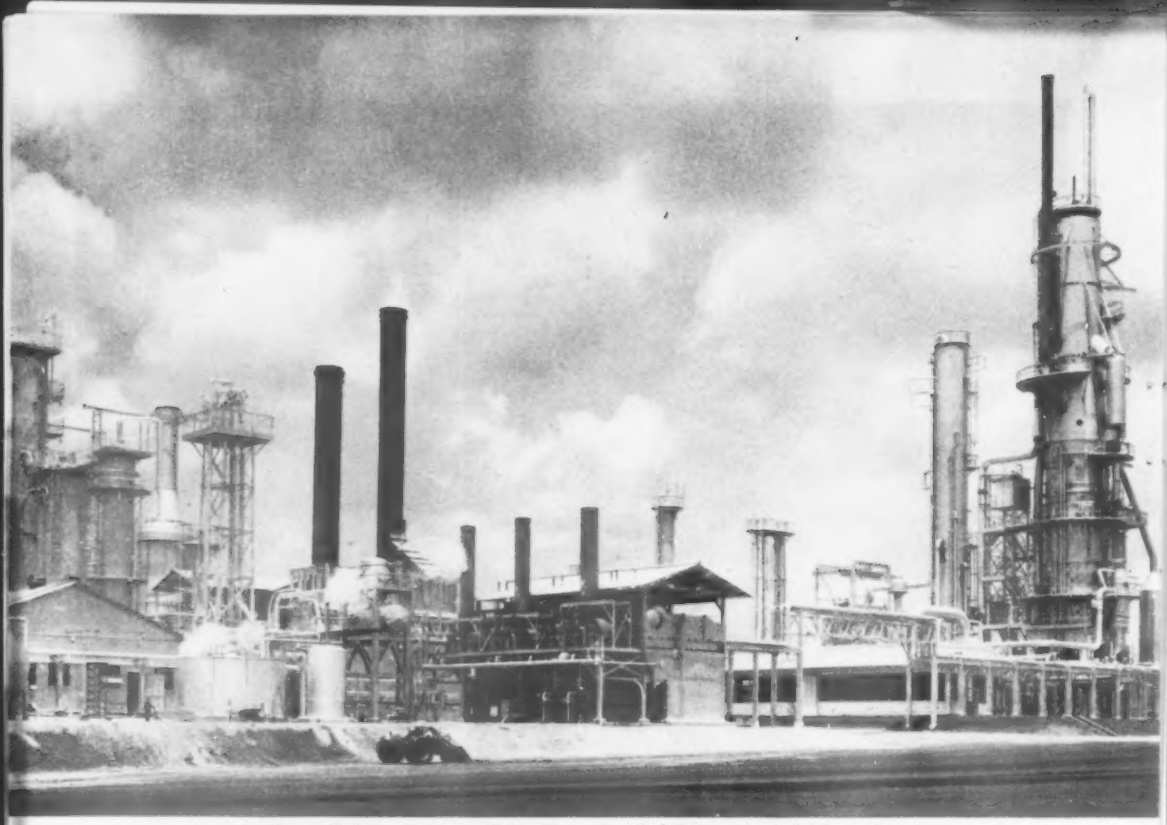
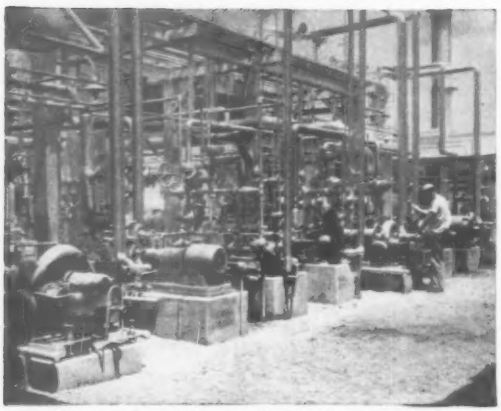
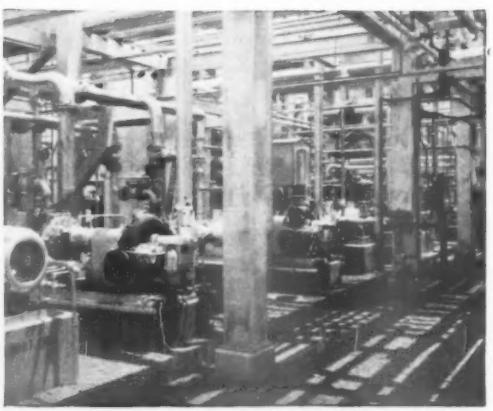


McMurrey Refining Company, Tyler, Texas, installed G-E mechanical-drive turbines throughout their plant to help assure continuous capacity output of 5000 bbls. per day.

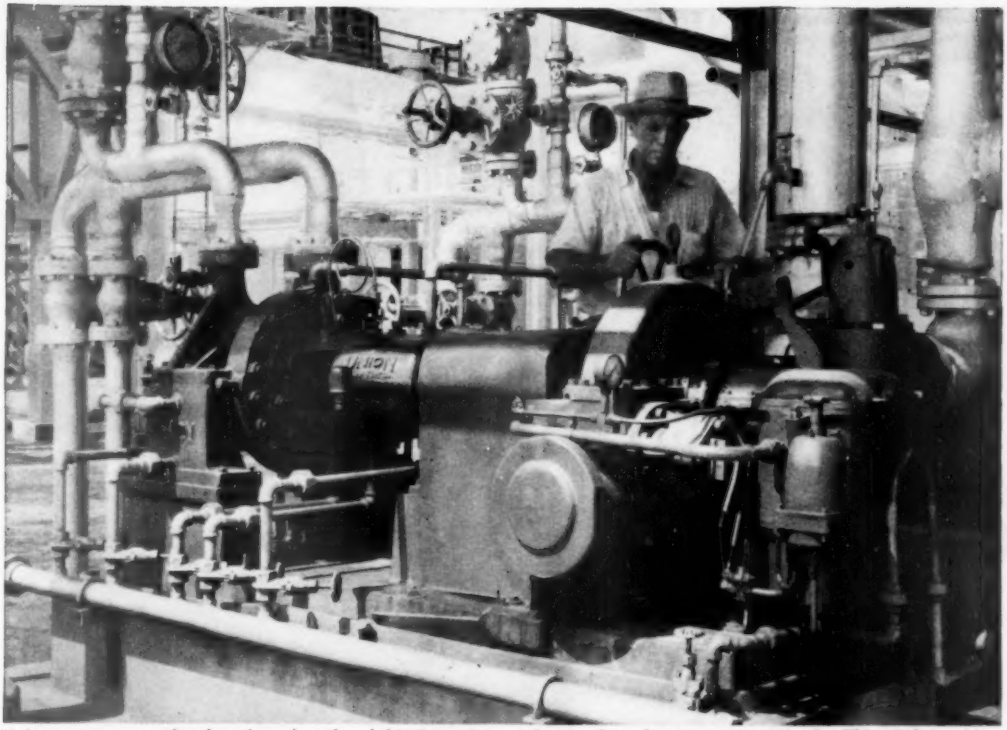
G-E Turbines Save Maintenance,



G-E turbines and motors are paired at McMurrey Refinery to utilize large steam supply efficiently. When process steam demands decrease, surplus steam is economically diverted to turbine drives. These Type DP turbines range from 8 hp to 41 hp.



Shown here is part of a row of ten General Electric Type DP turbine drives and motors, ranging from 9 hp to 48 hp. The many interchangeable parts on these turbines make stocking of spare parts an economical matter.



Maintenance personnel at the refinery have found this General Electric Type DP mechanical-drive turbine, like the many others at the refinery, easy to maintain. This 47-hp turbine at McMurrey Refinery drives a boiler-feed water pump.

Inventory Costs at McMurrey Refinery

Installed to improve steam balance, G-E standard turbines, with many interchangeable parts, also cut inventory costs.

The McMurrey Refinery, Tyler, Texas installed General Electric mechanical-drive turbines to help regulate steam balance. Since process steam demands range from 30% to 70% of available supply, surplus steam is economically diverted to turbine drives.

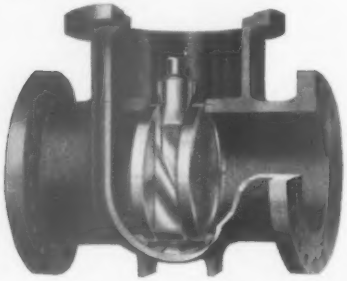
Time soon proved the many other advantages of G-E turbine drives which were especially designed for the petroleum industry. Mr. Dave Hood, Mechanical Maintenance Foreman at the refinery, states, "With these turbines on the line now for over a year, we're happy to report that they are extremely easy and economical to maintain, requiring very little of our time for maintenance."

Mr. Hood also said, "Since we have quite a few different sizes and ratings of turbines here, we're particularly pleased with the great number of interchangeable parts on these turbines. It certainly cuts down our inventory problem." Interchangeability of a great majority of the replaceable parts (regardless of hp rating) is a big feature with G-E standard turbine drives, which are paired with motors throughout the refinery to help assure uninterrupted service.

Call in your G-E sales-engineer or write for bulletin GEA-4955A, "A New Standard in Mechanical-drive Turbines." Section 252-58, General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

Cutaway showing extreme simplicity of Darling's unique fully revolving double disc parallel seat gate valve principle.



TROUBLE-FREE SERVICE

because it's a DARLING cast steel pipe line gate valve

Darling 20" motor-operated series 600 gate valve of the revolving disc type on a major oil line.

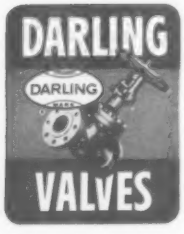
LET'S go on record that there's probably no other pipe line valve that can match a Darling gate valve in *avoiding* the most common operating troubles. Darling users have been finding this out on all their cross-country lines.

Back of it is Darling's *fully revolving double disc parallel seat principle.* This results in automatic compensation for valve body distortion, uniform distribution of disc and seat wear, and positive closing. And, naturally, these things add up to longer valve life *with the lowest maintenance and least trouble.*

If you're not already using Darling Pipe Line Gate Valves, it will pay you to take a few minutes to get fully acquainted with the unique Darling double revolving disc principle and its many advantages.

SEND FOR DATA

Darling Parallel Seat Gate Valves come in a wide range of sizes and types for all gas and oil line requirements. Simply outline your particular service needs or ask for a complete descriptive bulletin.



DARLING VALVE & MANUFACTURING CO.
Williamsport 1, Pa.
Manufactured in Canada by Sandilands Valve Manufacturing Co., Ltd., Galt 19, Ont.

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Single-cylinder, two-cycle AJAX design means few wearing parts—cuts out costly repairs and frequent adjustments—stays on the job and saves money!

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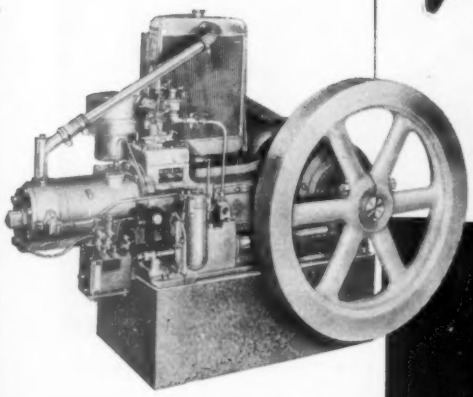
Bigger and more rugged parts—larger wearing areas—roller main bearings—efficient thermo-syphon cooling—all in an engine made to make money by productive AJAX performance on the toughest jobs!

✓ LONG LIFE

AJAX long life is famous in every field. Smooth power flow—shorter, single-throw crankshaft—low bearing pressures are a few long-life features that pay dividends on your AJAX investment. *For the detailed, positive facts, see your Supply Man now!*



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Builders of Gas Engines • Steam Drilling Engines • Industrial Steam Engines

CORRY, PENNSYLVANIA

Oil Field Distributors: THE NATIONAL SUPPLY CO., PITTSBURGH, PA.
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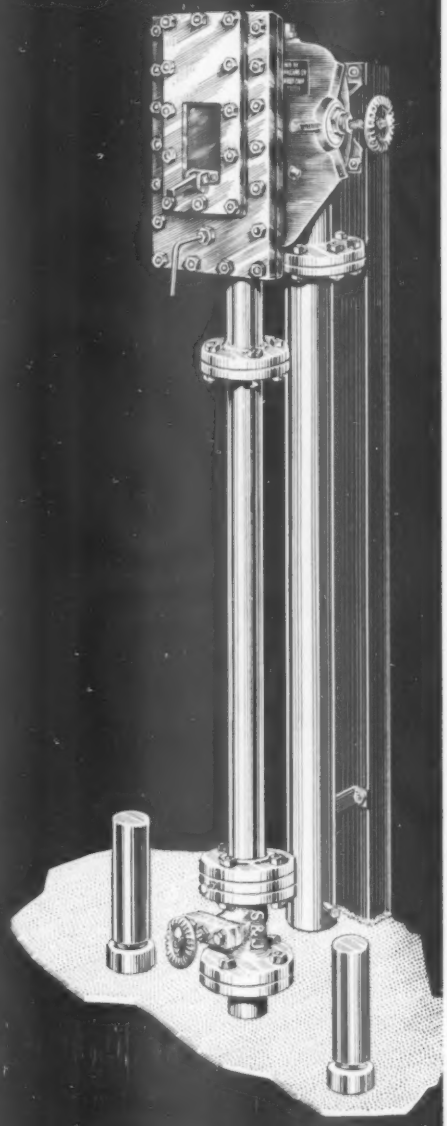
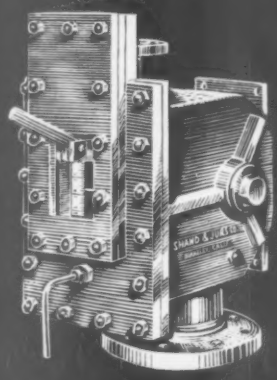
TWO ACES

There's no gambling when you use either of these two Shand & Jurs High Pressure Automatic Tank Gages. Both are designed to produce economical tank gaging, precise measurement, dependability and long useful life. S. & J. Fig. ST-400 Automatic Tank Gage is designed for operating pressures up to 150 pounds, the ST-400P for pressures to 300 pounds. The stainless steel reading tape is completely enclosed and kept taut at all times by an internal counterweight. The tape is read through a window of heavy safety glass which is further protected by a steel safety closure which in normal position covers the glass.

S. & J. Fig. ST-400 type gage is also made for roof mounting in both pressure ranges. The S. & J. Tape Block Valve, ST-5265 can be employed with either gage to isolate the gage head from the tank vapors for purposes of inspection and maintenance.

No, there's no gambling when you use S. & J. High Pressure Automatic Tank Gages.





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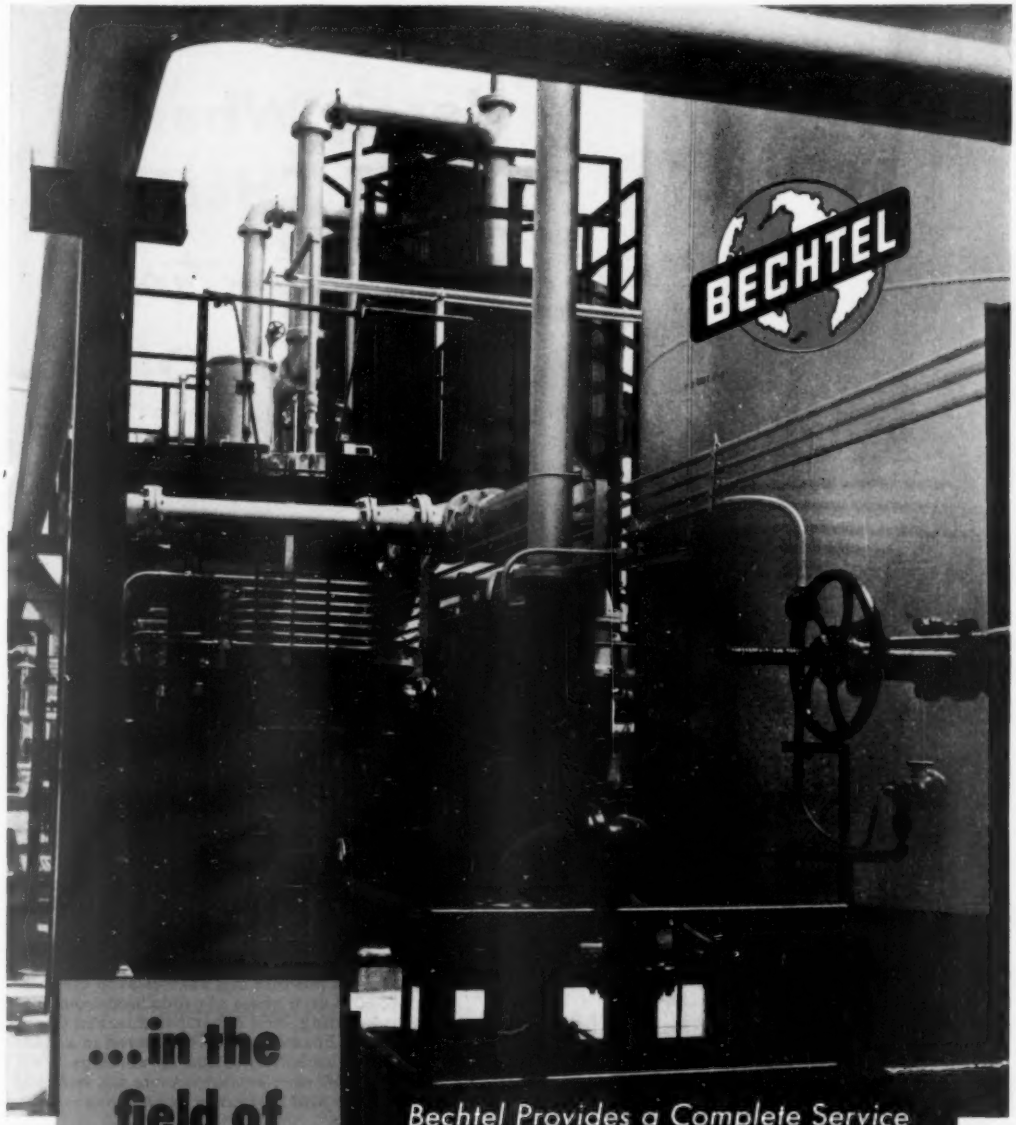

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* Portion of condensate filtration plant recently completed for Union Oil Company, as part of Wilmington Refinery expansion program.

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PITT CHEM quality-control starts paying off from the minute you start coating—and keeps on paying off with every mile you cover. Pitt Chem Hot Applied Enamels not only require less heating time, but they also flow better from kettle to pipe. Their uniform application characteristics and excellent bond helps you to cover *more miles per day* by minimizing coating delays. And, for the same reason, you'll coat *more pipe per ton of enamel.*

These outstanding qualities of Pitt Chem Tar Base Enamels stem directly from our unique position as a basic and integrated producer of pipeline enamels . . . a position that enables us to carefully control each phase of production from coal to finished coating. And remember this: Pitt Chem Pipeline Enamels are manufactured in a plant devoted *exclusively* to coal tar coatings. *We'll gladly provide more product information, technical data or field application assistance on request.*

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★ Modified Grade Tar Base Enamel
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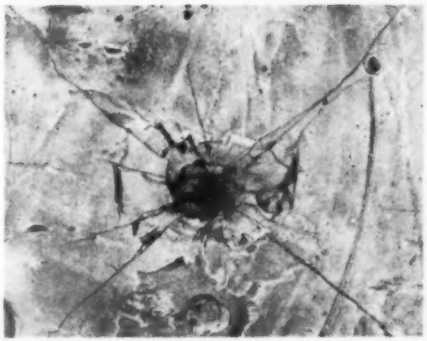
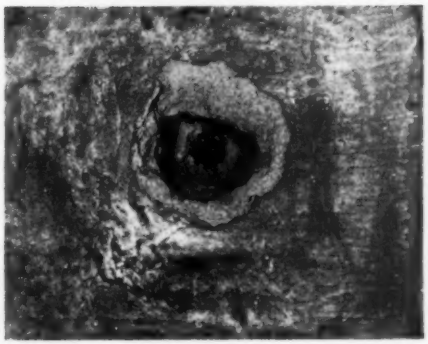


0% POZMIX – 100% CEMENT
BY ABSOLUTE VOLUME
CURED 3 DAYS AT 100°F.

50% POZMIX – 50% CEMENT
BY ABSOLUTE VOLUME
CURED 3 DAYS AT 100°F.



SUPERIOR TENSILE and COMPRESSIVE STRENGTH

with HALLIBURTON'S POZMIX

Halliburton's Pozmix cement cuts down heat of hydration and offers improved strength and resistance to sulfates. Proof of the superior strength characteristics of Pozmix is illustrated above.

It is known that early strengths of portland-possolan cements are much more resilient than regular portland cement although the material strengthens with age – ultimately becoming as strong as neat portland cement.

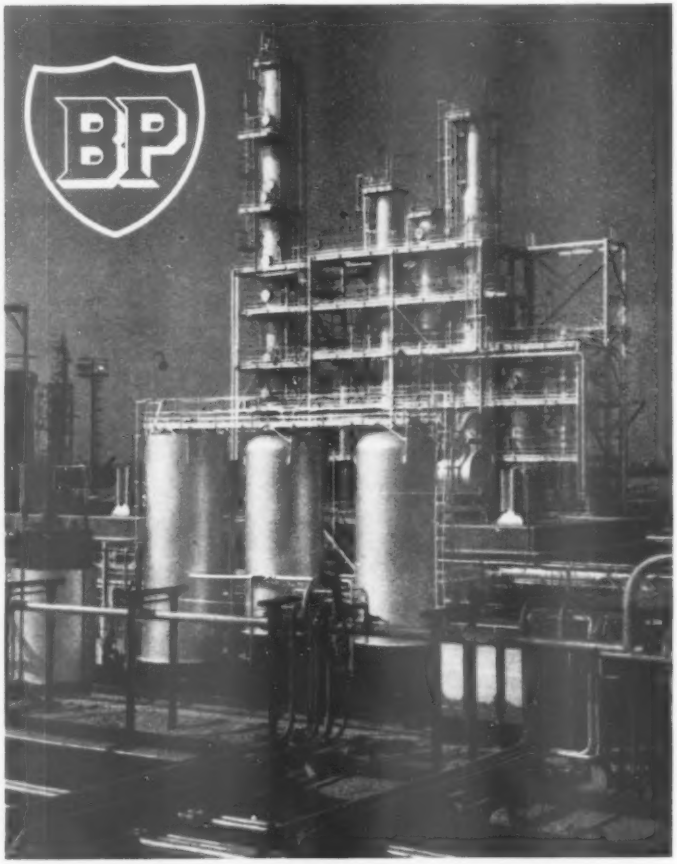
The enormous advantage of this resiliency is immeasurable in money saved on future remedial work, for much less shattering occurs in the exclusive Halliburton Pozmix while perforating.

POZMIX NOW AVAILABLE IN QUANTITY... Don't delay comparing both advantages and costs. Contact your nearby Halliburton Representative. Or write to Halliburton Oil Well Cementing Company, Duncan, Oklahoma.

HALLIBURTON

YEARS AHEAD IN OIL WELL CEMENTING

IT'S QUAKER OATS' FURFURAL FOR S.G.H.P.



Photograph courtesy of Société Générale des Huiles de Pétrole B.P.

This newly completed refining unit for the production of high quality lubricants at the plant of Société Générale des Huiles de Pétrole B. P. at Dunkirk, France, uses QO-Furfural as the selective solvent. In addition to providing the high quality petroleum products S.G.H.P. requires, the furfural process is attractive because it offers the user economical operation, ease of handling, maximum flexibility, safety of operation and high recovery. The solvent is readily available from raw material sources that are renewable annually.

The use of furfural as a selective solvent is applicable to petroleum fractions other than lubricating oils as well as to extractive distillation and solvent refining of other products such as C_4-hydrocarbons, wood rosin and glycerides.

For additional information about furfural and its uses as a selective solvent write to The Quaker Oats Company.

The Quaker Oats Company CHEMICALS DEPT.

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J&L DRILL PIPE

"Precisionbilt" Permaset Rotary Drilling Lines, made to resist abrasion, shock, fatigue. Ton miles built in for more round trips with confidence.

The original Integral Joint Drill Pipe. Made of Blue Ribbon Heat Treated Alloy Steel. The Tool joints have hard facing. Built to MAKE HOLE!

When your drilling line is J&L "PRECISIONBILT" and your drill pipe is J&L API Integral Joint, you can be proud of two of the most important items on your rig — any rig. They are made for men who buy wisely and drill hard.

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J&L STEEL
Subsidiary of Jones & Laughlin Steel Corporation

NETWORK STATION, the Mid-Continent location at Sundown, Texas and its 180-foot tower. With three exceptions, all towers in the 8-station network are 180 feet high.

MID-CONTINENT GIVES FASTER SERVICE... SAVES MONEY WITH G-E 2-WAY RADIO

All oil field customers benefited when this company linked offices and field cars in West Texas and New Mexico with fast, dependable, G-E narrow band two-way radio units.

Drilling crews and rig operators in 23 counties from Snyder west to Eunice now get fast equipment repair and service. Mid-Continent has stations located at Midland, Odessa, Snyder, Kermit, Brownfield, Sundown, Hobbs, and Eunice, with construction under way at Abilene, Wichita Falls, Gainesville and Bowie.

Here's how it works. A field man out of Mid-Continent's Snyder location, for example, recently drove up to a rig 35 miles out of town just as the rotary hose blew out. Picking up the microphone in his car, the field man called the office and ordered new hose, which was on its way to the rig in minutes. Saved: 2 hours of shutdown.

"It boils down to one thing," sums up Division Manager W. W. Arnold, "G-E 2-way radio helps us service our customers faster than any other tool we've got. It saves us both time and money."

The Mid-Continent system consists of G-E narrow band mobile and station units, acclaimed by oil men as the most dependable on the market. G-E engineers surveyed this user's needs, designed the system to fit, and installed the equipment. It is kept in shape with year 'round inspections and servicing.

There's a CAS* man in the General Electric office near you who can help solve your communications problem. Call him today!

**Communications Advisory Service*

WAREHOUSE INSTALLATION. A Mid-Continent man answers a call from the field at the General Electric cabinet installation in the company's Snyder warehouse.

FIELD SUPERVISION. A call is made by a Mid-Continent Supply Co. field man to his home office. Field calls like these save valuable time—get the job done faster.

TRANSMISSION EQUIPMENT. Widely separated stations in the Mid-Continent network relay messages to cars through a central control center.

NETWORK

ON THE JOB at a rig location is W. W. Arnold, West Texas—New Mexico Div. Mgr. for Mid-Continent Supply Co. "G-E radio helps us service our customers faster than any other tool we've got," Arnold says. "It saves us time and money."

CALL ANY OF THESE GENERAL ELECTRIC OFFICES:

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Houston, Texas	Syracuse, N. Y.	Daytona Beach, Fla.	Indianapolis, Ind.
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Los Angeles, Calif.	Boston, Mass.	Pittsburgh, Pa.	San Francisco, Calif.
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GENERAL ELECTRIC

At Last...

A LONG-STROKE HYDRAULIC PUMPING UNIT

Designed—Built—Priced

FOR STRIPPER WELLS

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THE SALENTINE

VARICYCLE

Increased production—both immediate and ultimate.

Sanding up eliminated, or greatly reduced.

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Higher volumetric efficiency in working barrel.

Maximum production without pumping off or pounding fluid.

Less wear and failure of all parts, such as rods, tubing, pumps, balls, seats.

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No concrete foundation is usually necessary.

Quick and easy set-up. Some machines are being used as portable test units.

Completely field-proven — more than twelve years in development. No "bugs" to work out at the customer's expense.

The present perfected models have been in use by both majors and independents for more than five years.

Low first cost. Prices competitive with conventional mechanical equipment.

Qualified representatives for sales, service, and parts are now located at convenient points throughout the oil country.

Immediate delivery at present.

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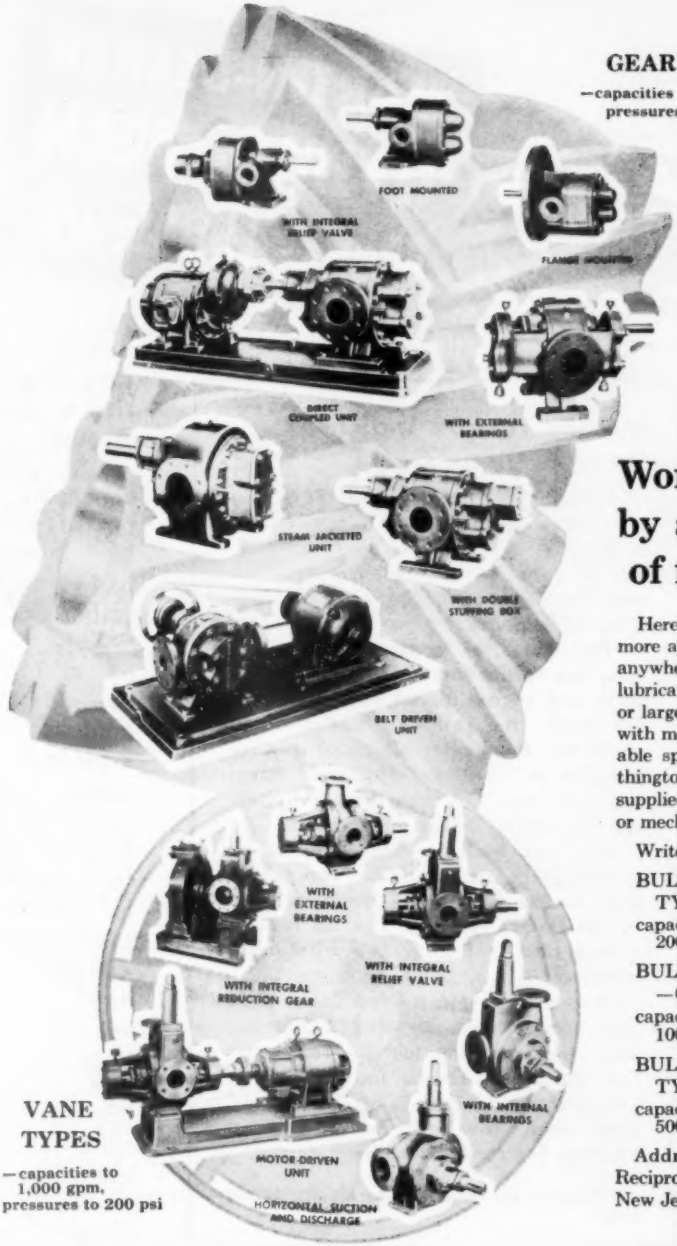

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—capacities to 1,000 gpm, pressures to 200 psi

This is what Worthington means by a "complete line" of rotary pumps...

Here's one rotary pump line that covers more applications than any you can find anywhere. Whether you pump thin, non-lubricating liquids or viscous liquids, small or large capacities, low or high pressures, with motor, turbine, engine, belt, or variable speed motor drive, there's a Worthington rotary that'll do your job. Units supplied with either conventional stuffing or mechanical seal.

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capacities to 1,000 gpm, pressures to 200 psi

BULLETINS W-484-B1A AND B2 —GEAR TYPES
capacities to 56 gpm, pressures to 100 psi

BULLETIN W-487-B10C—GEAR TYPES
capacities to 5,000 gpm, pressures to 500 psi

Address: Worthington Corporation, Reciprocating Pump Division, Harrison, New Jersey.

P-2.4A

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WORTHINGTON
Rotary Pumps

MARTIN-DECKER HYDRO-MECH Makes The News*

Rotary Torque Indicator Saves Drilling Costs

Trouble had been experienced with bit cones becoming detached when drilling in West Texas. Consequently, fishing jobs were necessary with the attendant loss of drilling time and additional expense.

The cause of cones breaking off was due to the fact that a cone would lock, and by additional rotation of the bit itself the jammed cone would shear-off. More often than not any indication of what had happened down the hole was not immediately apparent. A fishing job was the result.

A torque indicator will show when a cone jams, as the driller can see at once on the gage the sudden increase in the torque reading. The bit is then pulled and a fishing job has been avoided.

One company in a West Texas area spent on an average of $10,000 per well on recovering lost bit cones before the rotary torque indicator* was included as an "eye" for the driller. Since then, the cost charge against "fishing for cones" has been zero.

*Martin-Decker Hydro-Mech torque gage.

*The above information was obtained by Jack Meneer, an editorial writer for the PETROLEUM ENGINEER, who gave permission for reproduction.

MARTIN HOME OF THE WEIGHT INDICATOR DECKER CORP.

LONG BEACH, CALIFORNIA

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MID-CONTINENT DISTRIBUTOR: REED ROLLER BIT COMPANY, HOUSTON, TEXAS
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IVERSON stores are strategically located to the oil fields. Store managers, field representatives and store personnel join in their desire to help you produce most at least cost, in drilling, production or refining. You'll find them a good group to get acquainted with for they are happiest when they can be of service to you.

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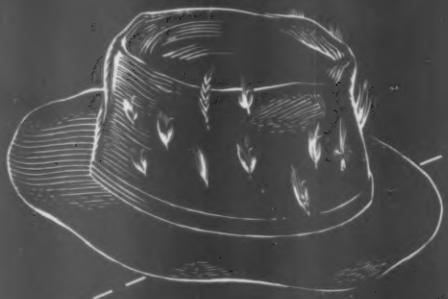
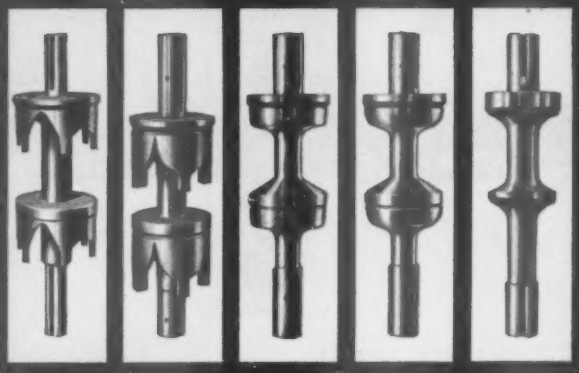
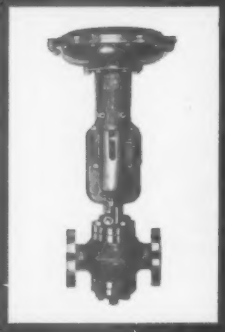


WIDE SELECTION . . .



for any valve application



Discs for the Honeywell Series 700 Valve include single and double-seated V-ported and contoured types, each with either linear or equal-percentage characteristics, plus a flat disc for on-off control . . . all ground and polished . . . all designed to retain characteristics under severe service. The Honeywell Series 700 Valve comes in a full range of styles and sizes . . . has *all* the features you look for in a fine valve. Write today for your copy of Bulletin 700-2. MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division,* 1906 Windrim Avenue, Philadelphia 44, Pa.

MINNEAPOLIS

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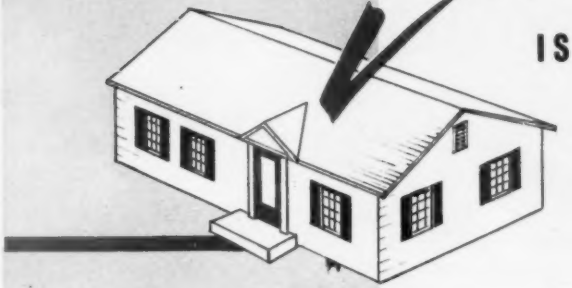
First in Controls

SELECTING THE *RIGHT* FIELD HOUSING IS *IMPORTANT...*



It's good employee relations to see that oil field workers have comfortable homes. It is good business to select field housing that has proved right for the oil industry for almost 35 years.

STURDYBILT Prefabricated Houses are *right* for the oil fields because they are economical, easy to erect, can be moved from one site to another, and are handsome and comfortable enough to suit the most particular oil field family.

Get the RIGHT field housing. Order STURDYBILT Prefabricated Houses.

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STURDYBILT HOUSES COMPLY WITH COMMERCIAL STANDARD CS125 OF THE NATIONAL BUREAU OF STANDARDS FOR PREFABRICATED HOMES

NOW —a new self-clean

-WITH JET ACTION-

only three minutes to clean basket and get back on stream

Here is an entirely new approach to clean pipe line products. Not only does this strainer remove the solids from the fluid, but, of even greater importance, it reduces the cleaning time to only a few minutes and thus eliminates the necessity for by-passing.

Note in the cutaway view above how banks of rotating jets (4) are arranged to clean the basket by hydraulic impact. One minute of this rotary scouring action, utilizing line product or water under high pressure, cleanses the basket and flushes the solids down the drain (9). Only a couple of minutes more are needed to return the clean strainer to service (see below). Thus, when a pig is in the line and the strainer is needed most, the Jet Type Strainers may be cleaned so rapidly that there is never any question of by-passing. Meters are protected at all times and the product is accurately measured.

Another direct benefit is the saving in man-hours. It is not necessary to remove, clean, and replace felts as in conventional strainers.

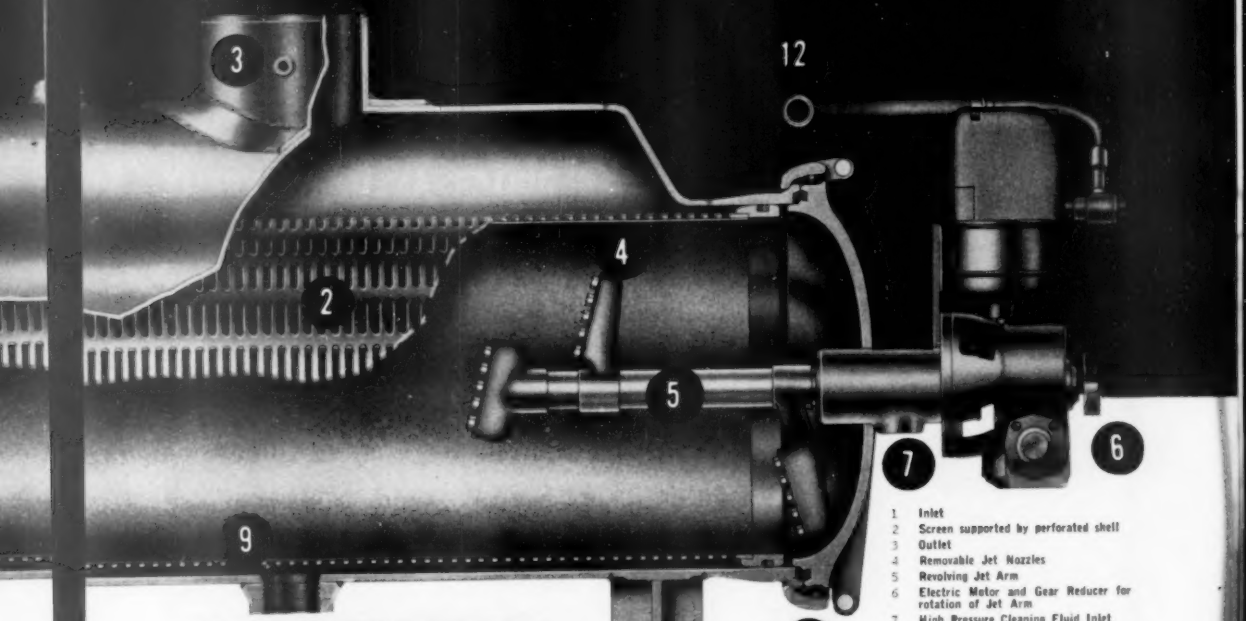
Pressure differential recorder tells you when basket needs cleaning.

Turn selector switch to number of strainer to be cleaned.

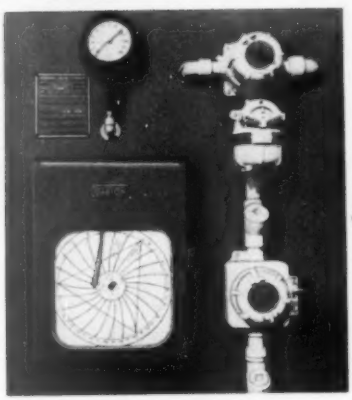
On strainer to be cleaned, close inlet and outlet and open drain, air relief, and cleaning fluid valves.

Depress starter switch for one minute.

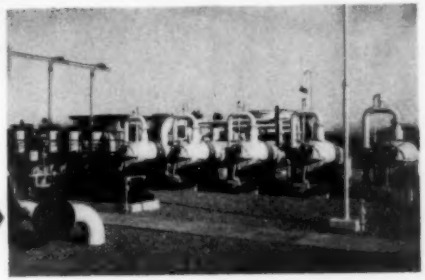
ing pipe line strainer -



1 Inlet
2 Screen supported by perforated shell
3 Outlet
4 Removable Jet Nozzles
5 Revolving Jet Arm
6 Electric Motor and Gear Reducer for rotation of Jet Arm
7 High Pressure Cleaning Fluid Inlet
8 Drain
9 Auxiliary Drain
10 Air Vent
11 UNIBOLT Hinged Type Closure
12 Flexible Conduit for electrical wiring to motor



◀ Left — Control panel consisting of pressure differential recorder, jetting pressure gauge, selector switch, and starter switch.



▶ Right — Five, 30,000 bbl. capacity, Jet Type Strainers installed on a 14-inch products line in North Carolina.

The Jet Type Strainer need never be opened except to inspect or to exchange the basket. A hinged UNIBOLT Closure of the type now in wide usage on scraper traps provides easy access to the unit by simply releasing two bolts. The basket consists of a perforated monel metal shell with stainless wire screen of any desired size — 100, 200, 325, or 400-mesh.

Another unique feature is the Pressure Differential Recorder (see illustration above) which records the pressure differential between the inlet and outlet sides of the strainer. When this pressure reaches a predetermined value, the basket should be cleaned.

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P. O. BOX 1184 **HOUSTON, TEXAS**

CORROSION affects every plant in the Petroleum Industry

MILLIONS OF DOLLARS ARE LOST ANNUALLY

1 Your Hard-to-Get Equipment
. . . may be ruined by constant attack of acids, alkalies, fumes, chemicals, moisture, gases and weathering.

2 Your Valuable Products
. . . are subject to contamination and loss whenever they are in contact with corroded surfaces.

3 Expensive Shutdowns
. . . and loss of production with costly man-hours for repairs may be incurred unnecessarily.

4 Your Profits
Ruined equipment, contaminated products, the loss of production and repair expense caused by shutdowns mean only one thing . . . reduction in *your* profits!

RIGHT NOW . . . you should investigate the economies of using Amercoat; a *line* of coatings built to protect against *specific* industrial corrosion hazards.

Our field engineers are available . . . without obligation . . . to check your plant for corrosion problems . . . and to give you *specific* recommendations.

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AMERCOAT CORPORATION

[illegible] SOUTH GATE, CALIFORNIA

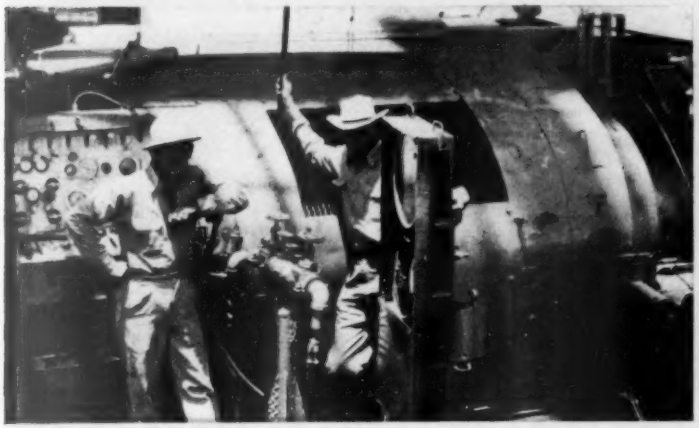
"no trouble... no fuss...
this Tiger Brand Line just keeps running!"

● "We haven't had a bit of trouble with this Tiger Brand Line in over 93,000 feet of hole—and it still has a lot of service left in it. We like American Line because we get the most footage from it." So says Cecil Campbell, Tool Pusher for Helmerich & Payne Drilling Contractors.

Mr. Campbell was on a rig near Midland, Texas at the time. This rig had drilled 9 wells—a total of *93,919 feet* of hole—with *one* 7500-ft. length of American Tiger Brand Wire Line, and the line was still in use and giving good service!

This was a 6 x 19, 1¼" Monitor Preformed Rotary Drilling Line, with Independent Wire Rope Core. This type of line is tailor-made for rugged rotary drilling service.

You can get a Tiger Brand Wire Line of the right size and type for every one of your rope needs. And every type gives maximum service in the jobs for which it is designed. Consult the Tiger Brand Wire Rope Specialist in your area to make sure you get the *right* line for every job.



"American Tiger Brand Lines are the best we have ever used; and we've tried about every make there is."

Helmerich & Payne Rig #25 near Midland, Texas. A Tiger Brand Rotary Drilling Line was still giving good service on this rig after it had been used on 9 wells totalling 93,919 feet.

USS AMERICAN TIGER BRAND WIRE ROPE UNITED STATES STEEL

AMERICAN STEEL & WIRE DIVISION
UNITED STATES STEEL COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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Excellay Preformed

USS

UNITED STATES STEEL

SKID-MOUNTED
SHOP ASSEMBLED

- Completely portable
- Shipment simplified
- With or without by-pass arrangement
- Fast, simple installation (tying in with field lines only connection work)

ADVANTAGES of STAGE SEPARATION

Maloney-Crawford's *Completely Packaged* Stage Separation Units utilize the PROVED PROCESS by which mixtures of oil and gas flowing from producing wells are separated into liquid and vapor phases by flowing through two or more separators in series at consecutively lower pressures.

The three well established advantages of Stage Separation are:

1. **Smaller amount of heavy hydrocarbons released with gas.**
2. **Higher gravity oil to stock tanks.**
3. **More stable oil in stock tanks.**

A variety of combinations in working pressures is available. For additional advantages that only Stage Separation can offer see your Maloney-Crawford representative or write direct.

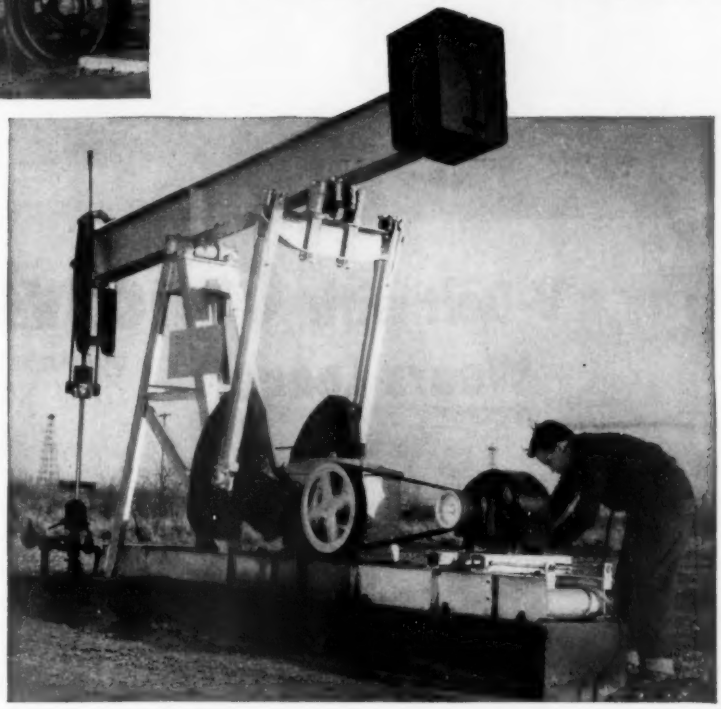
MALONEY CRAWFORD

MALONEY-CRAWFORD TANK & MFG. CO.

PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION MEMBER

FACTORY AND GENERAL OFFICE: 38 North Peoria—Box 659—Tulsa, Oklahoma
EXPORT REPRESENTATIVE: Baird Lines, 420 Lexington Avenue, New York, N. Y.
CANADIAN REPRESENTATIVE: Maloney-Crawford of Canada, Ltd., Box 4128, South Edmonton, Edmonton, Alberta.
TEXAS PANHANDLE REPRESENTATIVE: Atlas Tank Co., Pampa, Texas.

How much difference can this sheave make . . .



in this oil pumping job?

The man you see at this site can tell you—and so can hundreds of other oil-production men who have used the Worthington QD*.

Sheaves can be headaches. If they're made with solid hub, bored for tight fit on the shaft, they're tough to get off. If they're built with solid hub and loose bore for quick and easy removal, they often don't hold the shaft tight enough to withstand heavy shock loads without slipping. Not so with Worthington QD. Its unique two-piece design—*especially created to meet the demands of oil-production men*—makes it *easy to get on, easy to get off*. But with its heavy-duty, taper cone friction grip, it hugs that shaft *tight* against even the heaviest shock loads.

Local Worthington QD distributors in all oil-field areas are stocked-up in most sizes and they're backed up by factory stocks in Los Angeles, Fort Worth, Houston, Tulsa and New Orleans.

It'll pay you to STANDARDIZE on the Worthington QD. For more data, write for Bulletin V1400B7F to Worthington Corporation, Multi-V-Drive Sales Division, Buffalo, N. Y.

*Reg. U. S. Pat. Off.

MV.2.9

COMPRESSORS: AIR-COOLED, WATER-COOLED

PUMPS: CENTRIFUGAL, ROTARY, STEAM, POWER

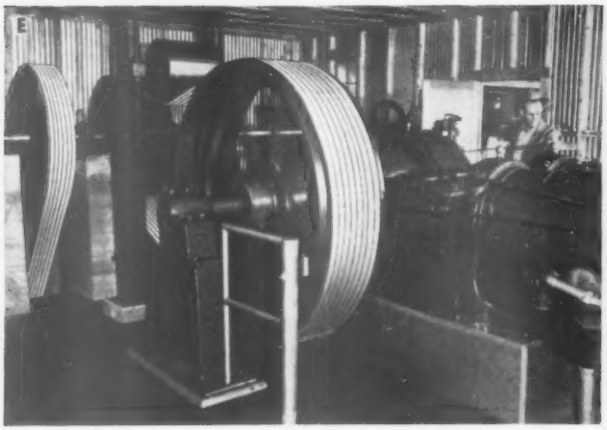
MULTI-V-DRIVES: QD SHEAVES AND V-BELTS

VARIABLE SPEED DRIVES: WORTHINGTON ALLSPEED DRIVE, WORTHINGTON ALLSPEED MOTOR DRIVE

Buy these Worthington standard products from your local distributor

WORTHINGTON

Multi-V-Drives



An extremely compact layout is made possible by the use of these Gates Vulco Rope Drives at the Bivins, Texas, plant of the Breakenridge Gasoline Company. The drives connect an engine with a line shaft driving cooling water and still circulation pumps.

Why a V-Belt with Concave Sides Wears Longer...

—Just try this yourself!

Pick up *any* V-Belt and bend it as if it were going around a pulley. As it bends, grip its side between your fingers and thumb. Here is what you will feel—*every time.*

If the V-Belt has *straight sides,* you feel those sides *bulge out.* This forces the sides of the belt to press *unevenly* against the V-Pulley and you naturally get *concentrated* wear along the bulge —as shown in figure 1-A, below at right.

Now, try this same test with the belt that is built with CONCAVE SIDES—the Gates Vulco Rope!

You find that the CONCAVE SIDES fill out and become perfectly straight. The sides press *evenly* against the V-Pulley. All wear is distributed *uniformly* across the *full width* of the Gates Vulco Rope—and this means *longer* belt *life* and *lower* belt *costs* for you.

The CONCAVE SIDES of Gates Vulco Ropes (U. S. Patent No. 1813698) clearly give you (1) Less wear, (2) More pulley contact, (3) More sure power transmitted when needed!

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE SIDES—the Gates Vulco Rope!

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

CS-5211

What Happens When a V-Belt Bends

How Straight-Sided V-Belt Bulges in the Sheave-Groove. Sides Press Unevenly Against the V-Pulley, Causing Extra Wear at Point Shown by Arrows.

The Concave Sides Fill Out to a Precise Fit in Sheave-Groove. No Side-bulge! Sides Press Evenly Against the V-Pulley—Uniform Wear—Longer Life!

V-Belts — Hose
Molded Rubber Goods
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World's Largest Maker of V-Belts

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No. 716
R-P&C Rising Stem
Bronze Gate Valve

Easy to Clean... Long-Lasting

• Designed for quick disassembly where frequent cleaning is necessary. Union bonnet adds strength; won't distort body or threads when removed. Rising stem shows position of wedge; fluid not in direct contact with operating threads.

High test bronze body and bonnet; high tensile rolled bronze stem; nickel-alloy solid wedge and seat rings. Sizes ¼" to 3". Steam: 200 lbs. at 500° F; OWG: 400 lbs. non-shock.

The No. **716** R-P&C Bronze Gate Valve is economical to buy and use. See your R-P&C distributor or write nearest R-P&C district office for full information.

R-P&C valves

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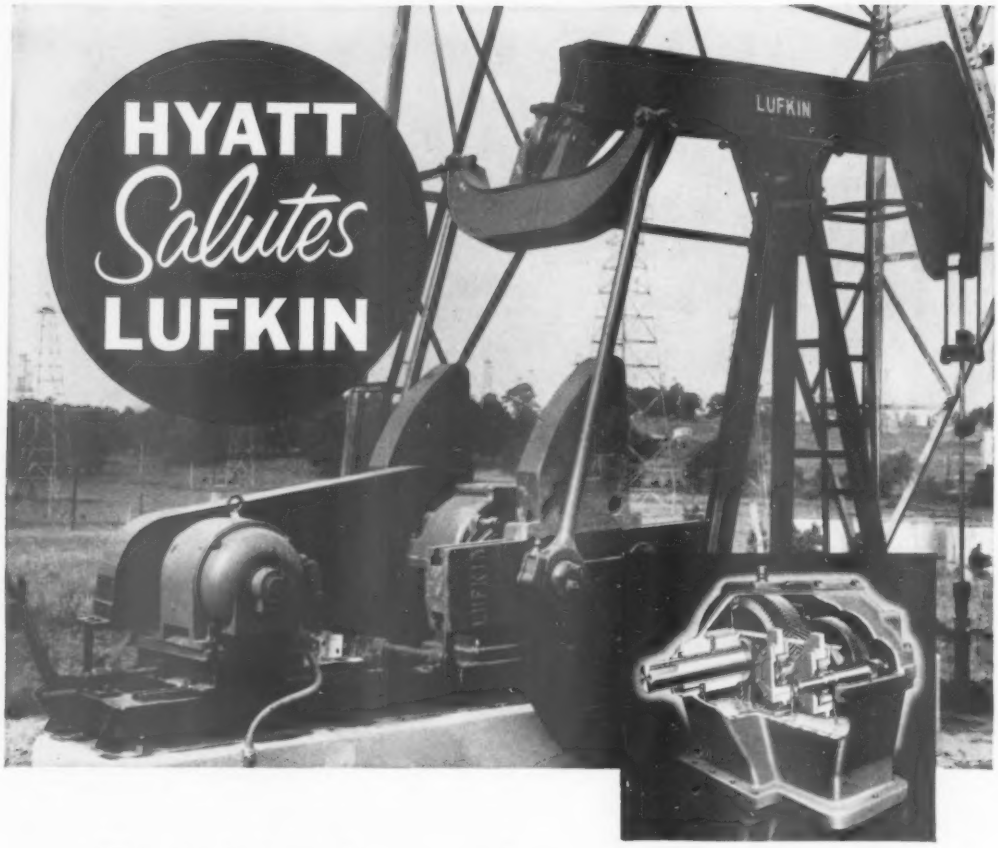
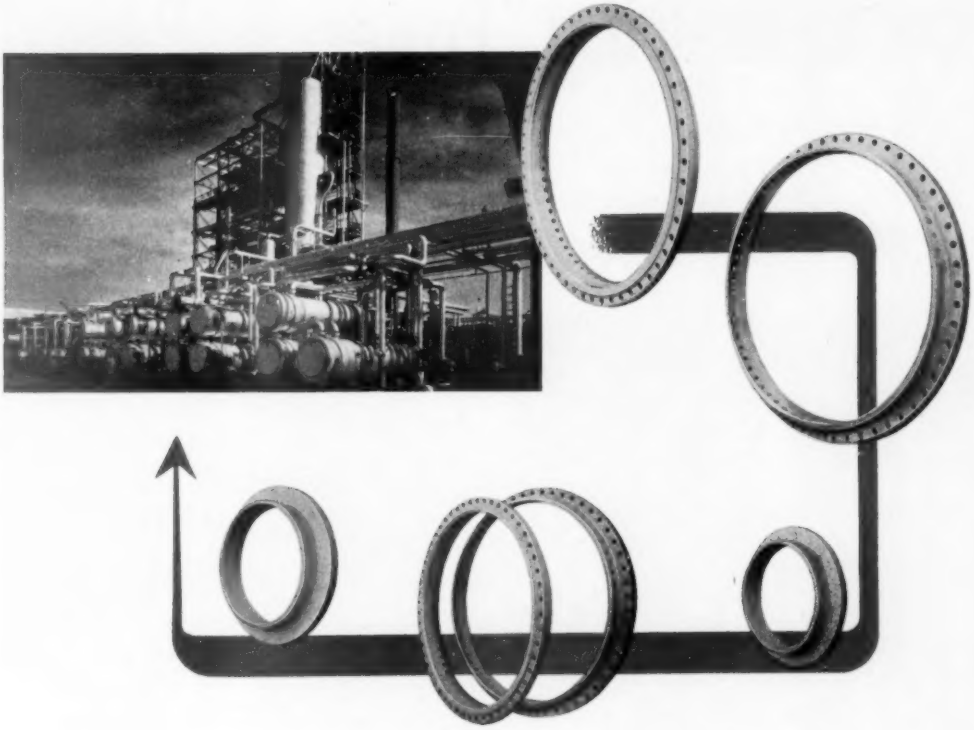


Hyatt joins the petroleum industry in celebrating Lufkin's 50th Anniversary

For a good many years of the past half-century, Hyatt has been privileged to supply top-quality roller bearings which have helped Lufkin oil pumping equipment to do such an outstanding round-the-clock production job.

And in many other makes of pumping and drilling equipment Hyatt Roller Bearings are also the preferred bearings, a preference earned over many years of unequaled performance by Hyatts in a variety of applications. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS



there's a **Railway Steel Flange**

for your application!

Railway Steel flanges are made from carbon and alloy steels for just about every job in the petroleum and gas industries . . . all the regular standard types of flanges, as well as special types, including those built to TEMA standards. Railway Steel flanges are available in a wide range of sizes and types from 18 in. ID to 150 in. OD.

Our own high quality carbon and alloy steels are used in the production of Railway Steel flanges. Every step in fabrication from the production of the steel through forging, rolling, heat treating and machining is under rigid control to assure you flanges that will give maximum protection to your products and processes.

Sales representatives in New York, Richmond, Cleveland, Chicago, St. Louis, St. Paul and San Francisco will be glad to provide you with complete information about these superior flanges for your applications.

Brake rims, gear blanks and other circular forgings are also available for many types of service—all made of our own steels for your protection.

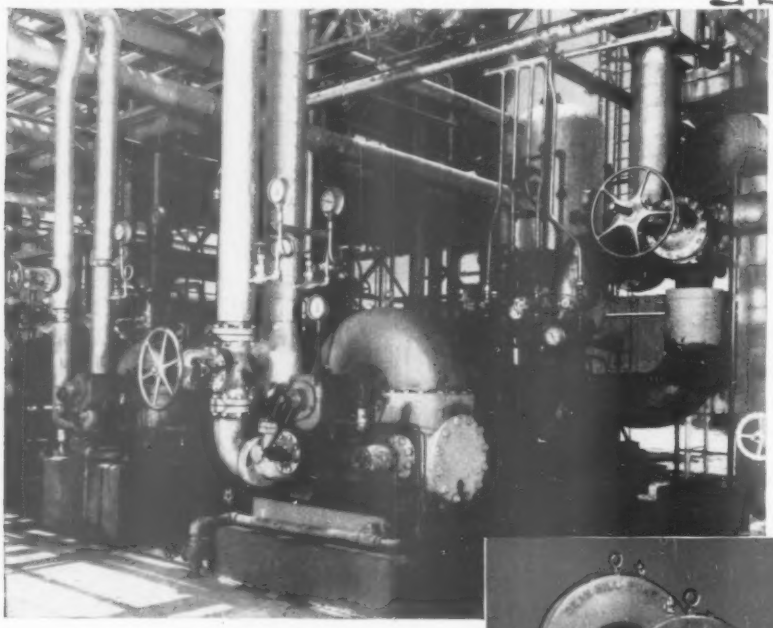
Railway Steel Flanges

RAILWAY STEEL-SPRING DIVISION

AMERICAN LOCOMOTIVE COMPANY

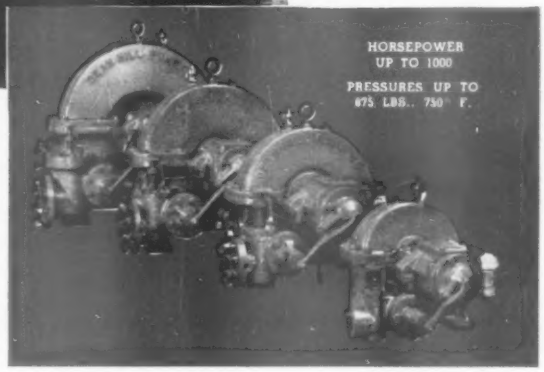
How to stretch a "Power Penny"

You'll never know how much power a penny will buy until you get Dean Hill Steam Turbines on the job. Their super rugged construction, their service-engineered design, their low maintenance, their remarkable power-producing ability all add up to *more power per penny.*



POWER AT WORK

Here are Dean Hill Type DH Steam Turbines at work driving centrifugal pumps at Bay Petroleum Corporation's Chalmette, La. refining operation.



DEAN HILL TURBINES are specifically designed for operation at medium steam pressures. Since they are the single stage, double impact type, low steam consumption is a tremendous economy feature. Steam rates are excellent under these conditions. Get full details and specifications. Write today.

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What's Your Yardstick for Measuring Drilling Line Quality?

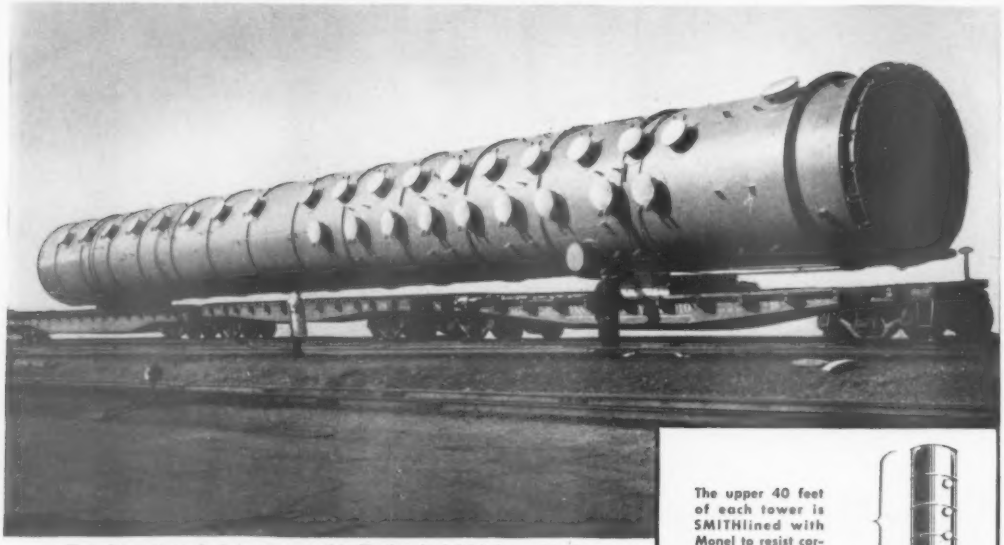
Most oil country men use one basic yardstick to measure drilling line quality and that's the service record. But at J&L we use hundreds of instruments, gauges and tests to check on the quality of J&L Wire Rope through every step in its production from the iron ore in J&L mines through the final closing and stranding of the rope. That's the only way we can be sure J&L drilling lines will pass the *important* test of quality in the field.

It's the down-to-earth test of performance on the job. The results are on the wire rope service record in terms of hole per wire rope dollar, downtime for re-rigging and length of service life. And because J&L drilling lines have posted a top-flight record, more and more cost-conscious drillers are finding themselves sold on J&L.

Why don't you put J&L drilling lines to the performance test on your cable tool or rotary rigs? You'll find all J&L Wire Ropes are "precisionbilt" to provide you with the easy handling and maximum service life that will help keep operating costs at a minimum.

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH 30, PA.

J&L STEEL



First of two atmospheric towers erected in The Standard Oil Refinery, No. 1, Cleveland, Ohio, each 130 feet high, 13 feet O.D. including nozzles and manways, and weighing 200,000 pounds.

The upper 40 feet of each tower is SMITHlined with Monel to resist corrosive acid vapors.

The 40-foot area where "cracking" occurs is SMITHlined with Type 316-ELC Stainless.

The bottom 50 feet is SMITHlined with Type 405 (12% Cr) to resist the corrosive action of hydrogen sulphide (H_2S).

THREE-STAGE atmospheric tower FOR SOHIO

A. O. Smith Process of "Smithlining" Permits Three Selective Linings in Single Refinery Tower

The economical solution of varying corrosion conditions in a single vessel is exemplified in the construction of two unusual atmospheric towers for The Standard Oil Refinery No. 1, Cleveland, Ohio.

Three types of lining, each specific for the corrosion condition in each of the three stages in the tower, were selected and bonded to the carbon steel structure by the A. O. Smith process of Smithlining.

Smithlining is the closely controlled resistance welding process of inseparably bonding alloy sheets to carbon steel vessel walls. Most alloys can be applied by this process. All liner materials can be rigidly inspected as to gauge requirements, surface finish, chemical analysis, mechanical properties and corrosion requirements prior to attachment.

The two towers were ordered and erected by Arthur G. McKee & Company of Cleveland, Ohio.

For assurance of superiority in vessel design and construction and for aid in solving vessel application problems, call on A. O. Smith, where the industry's leading laboratory, design and engineering groups are at your service.

Contact the nearest office, listed below, or write to A. O. Smith Corporation, Vessel and Heat Exchanger Division, Dept. OG-1152, Milwaukee 1, Wisconsin.

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Fire Fighter here discharges FogFOAM onto burning gasoline through 2½" FFF Nozzle.

FogFOAM *puts smothering blanket over flaming liquids*

Rockwood Nozzle Turns out Perfect Proportions of Foam, Air and Water to put out highly volatile flammable liquids; action is instant

Just 3 parts of Rockwood Double Strength Foam added to 97 parts of water, and you've a special "mix" that's death to fire.

It does its job through a special Rockwood FogFOAM nozzle that turns it into smothering FogFOAM. You get far greater fire fighting extinguishing action than ever possible with old style chemical or mechanical foam equipment.

Tank-truck and airplane crash fires — fires aboard ocean going tankers — fires in refineries and industrial plants — are quickly and effectively smothered.

What's more, Rockwood Double Strength FOAM is faster spreading, flows freely at sub-zero temperatures, will not corrode and can be easily washed away after fire is extinguished.

Rockwood proportioning systems automatically control ratio of FOAM liquid to water ensuring proper proportioning regardless of number of nozzles used. They can be custom engineered to your requirements.

Plan now to have a Rockwood Engineer recommend the right fire fighting equipment to meet your needs. Mail coupon below.

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Engineers Water . . . to Cut Fire Losses

Rockwood Type FFF FogFOAM Nozzle with FogFOAM Screen available for service on 1½", 2½", 3½" fire hose lines. Nozzles discharge Solid FOAM (with shaper), and High Velocity WaterFOG as well as FogFOAM (with screen). Range of FogFOAM with shaper approximately 60 feet, with screen 30 feet.

Fleet of Tankers is equipped with FFF Nozzles and proportioning system. Shown here, FogFOAM being discharged on deck and water during test. Ships must be protected from spill fires on water as well as aboard ship.

Rockwood Double Strength Foam — available in 5 gallon cans or 50 gallon drums. Tested by Underwriters' Laboratories.

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Please send me Rockwood's illustrated catalog on the complete line of cost cutting, efficiency-boosting products for modern fire fighting.

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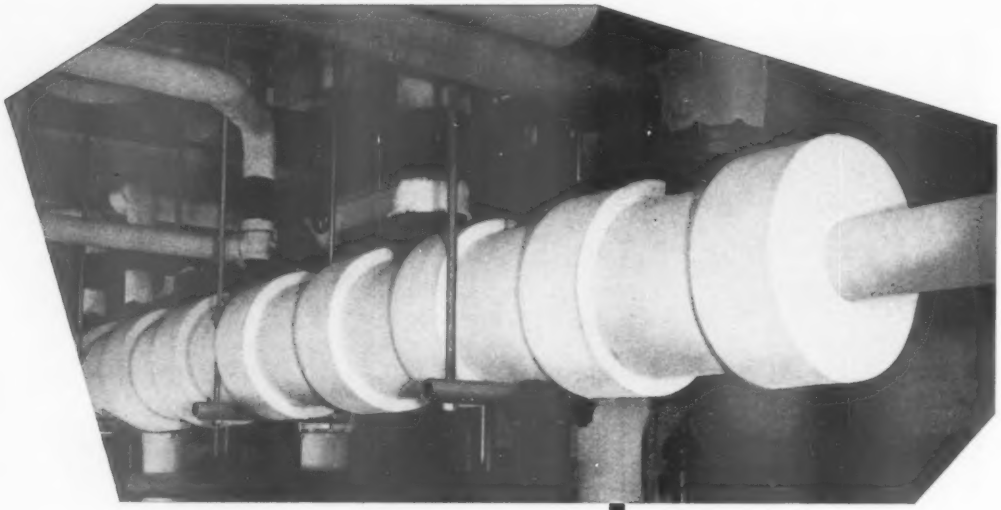


MAKE TOUGH JOBS EASY
WITH EASY-TO-USE

UNIBESTOS®

PIPE INSULATION

Ask any user about Unibestos! He'll tell you how easily this good insulation is cut and fit on-the-job, for Unibestos is light, strong, firm—saws cleanly for tight joints—retains initial high efficiency. It is unaffected by service hazards.

Whether you specify Unibestos No. 1200 (for temperatures up to 1200°F.), Unibestos No. 750 (for temperatures up to 750°F.), or Amocel for commercial uses (temperatures up to 600°F.), you'll always save in two ways: (1) quick and simple application; (2) long-lived durability. Your Unarco Distributor can supply you quickly from his stocks of these pipe insulations. Also available in block form for temperatures up to 1200°.

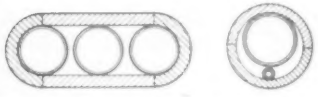
For details on these insulations, ask for Bulletin No. 76-109.

UNARCO

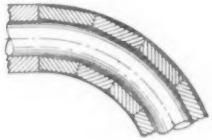
Write for the name of the Unarco Warehousing Distributor in your area.

SEE HOW THESE TYPICAL APPLICATIONS ARE SIMPLIFIED

Unibestos pipe insulation is particularly adaptable for insulating irregular surfaces such as flanges, valves, and fittings. Its firmness and easy-to-fit characteristics make such jobs easy; save time.



Unibestos pipe insulation and block can be used separately or in combination for insulating nested and traced lines quickly and economically.



For insulating pipe bends Unibestos can be mitered easily, and cemented-in with Unarco No. 50 insulating cement.

UNION ASBESTOS & RUBBER COMPANY

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COUPLED to the widely used Consolidated Analytical Mass Spectrometer, the new Spectro-SADIC supplies preselected analytical data for both gaseous or liquid mixtures in directly read *numerical* form, thus accomplishing tremendous savings in time and computing manpower, and, at the same time, eliminating human error.

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A CEC Field Engineer will be glad to detail the advantages as they apply to your specific process.

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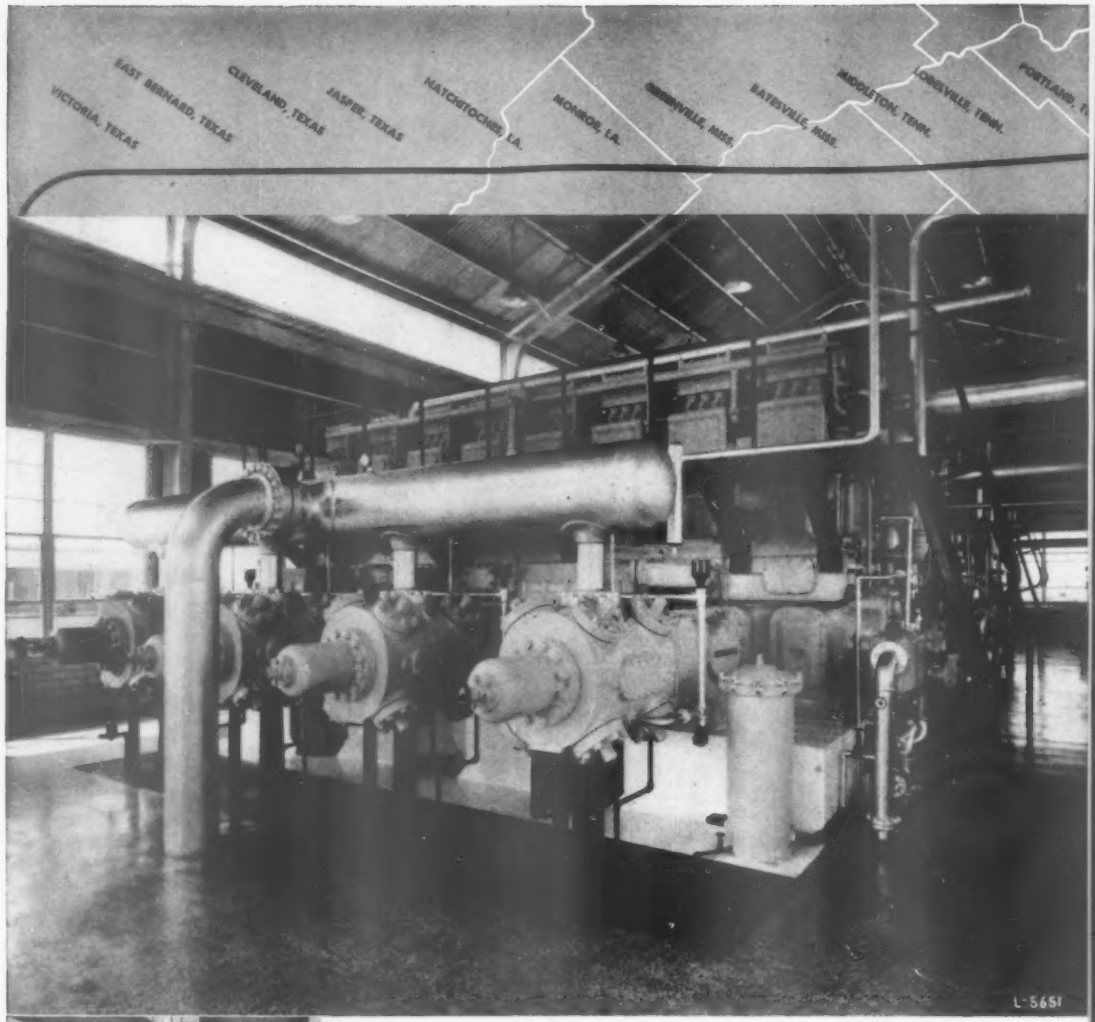
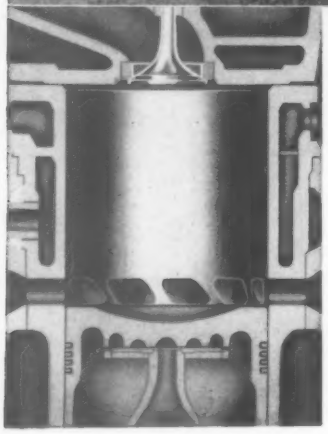
Complete information on the CEC Analytical Mass Spectrometer is contained in Bulletin CEC 1800B; the Spectro-SADIC is described in Bulletin CEC 3001A.



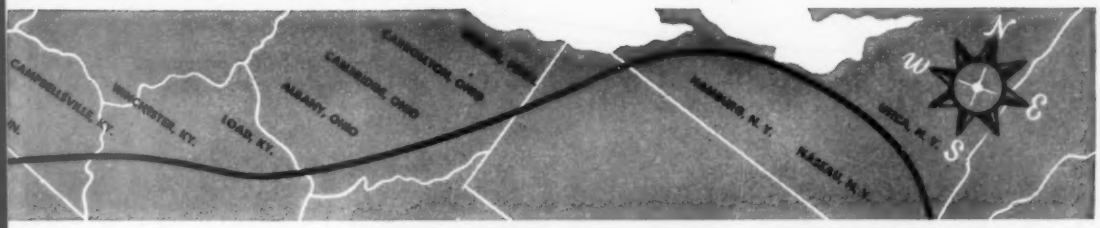


THREE WORTHINGTON 1,600-HP UTC ENGINE COMPRESSORS at Tennessee Gas Transmission Co., East Bernard Station. Installation includes five units now in operation. All engines use Worthington's Uniflo through-scavenging system, a design thoroughly proved by years of research by Worthington engineers.

WORTHINGTON'S TIMED-SCAVENGING SYSTEM, in the "vital power center" shown here, is one big reason that Tennessee Gas will get high-efficiency operation and minimum maintenance from their Worthington engines. Features: complete removal of exhaust gas, more thorough charging with gas and air, positive timing for optimum combustion, effective super-charging, and others.

V-TYPES ENGINE STARTING COMPRESSORS HORIZONTAL

NO OTHER COMPRESSOR WILL



2000-Mile Tennessee Gas Line —Longest in Country— operating 98 Worthington Compressors

46 Worthington UTC Engine Compressors help pump 1,250,000,000 cu ft a day

All along the Tennessee Gas Transmission Company line, from the Gulf Coast to the New England states border, you'll find Worthington UTC gas-engine compressors on the job.

At last report, more than 1,250,000,000 cu ft of gas was being sent through the line daily. A total of 46 Worthington UTC engine compressors are now installed at eight different compressor station locations.

All these UTC units use the Worthington *Uniflo timed-scavenging method*—one big reason for the smooth performance they give. Uniflo scavenging assures a "clean sweep" of burned gases.

While built primarily for pipeline gas compression, the UTC is ideal for many other jobs such as: pressure maintenance on oil wells; varied service in natural gasoline plants; on solvent extraction, vapor recovery, recycling and stabilization of gases in oil refineries; in petro-chemical processing of products made from natural gas under pressure; and in many refrigeration applications.

If your process requires gas compression and you have a suitable gas available for fuel, the Worthington Uniflo UTC can do the best possible job for you.

Sizes range from 1,000 to 2,000 hp. For further information, contact the nearest Worthington District Office or write for Bulletin S-500-B23B.

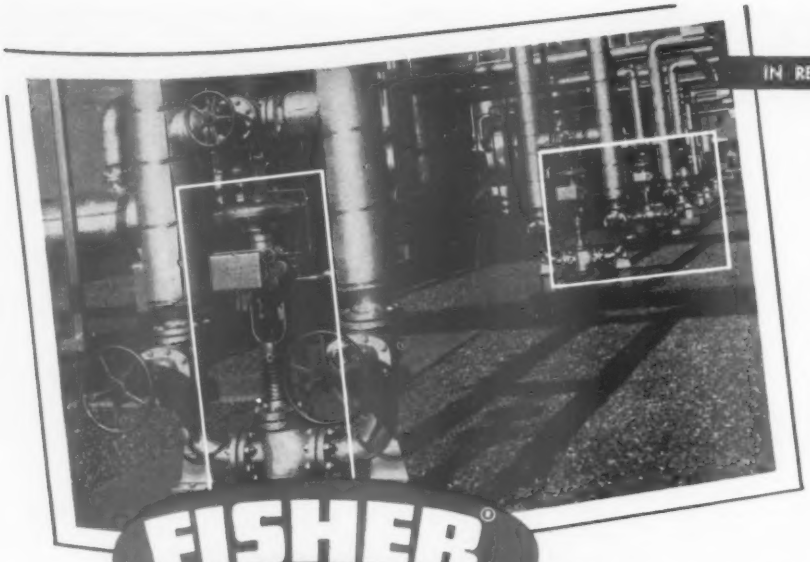
Worthington Corporation, Engine Division, Buffalo, N. Y.

EK.2.2

OUTPERFORM A WORTHINGTON

WORTHINGTON

Engine Compressors



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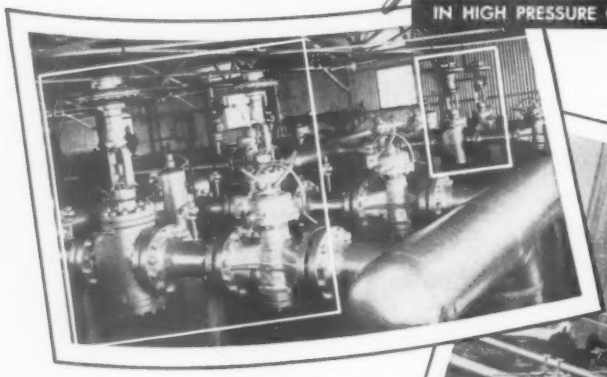

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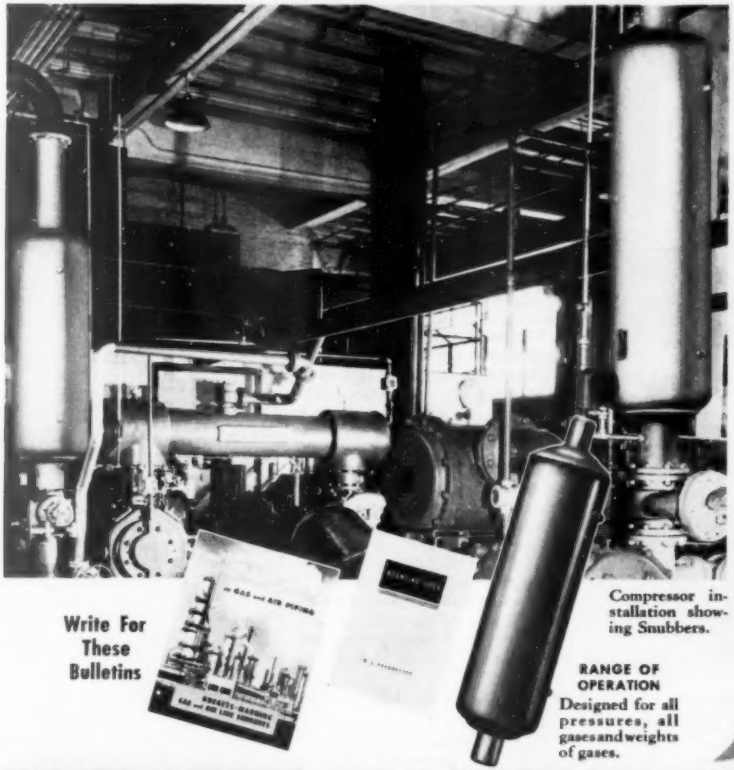
For Surge Control in Gas and Air Piping

Install BURGESS-MANNING SNUBBERS

Burgess-Manning engineers are eminently qualified by over twenty years' extensive study and field experience to solve your existing pipe-line surge problems. They will work intimately with your own engineering staff in the design of proposed compressor piping installations. These installations will be free from surging and the resultant vibration of gas and air lines excited by compressors, blowers, or reciprocating pumps. Through proper design, such costly innovations as special piping or specially reinforced pipe-line structures will be unnecessary. Metering fluid flow will be greatly simplified in a properly designed system. We invite your inquiries.



Compressor installation showing Snubbers.

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RANGE OF OPERATION
Designed for all pressures, all gases and weights of gases.

SURGE PROBLEMS
in Gas and Air Piping

VIBRATION

INACCURATE METERING

FLUCTUATING FLUID FLOW

Solved by BURGESS-MANNING Gas and Air Line Snubbers

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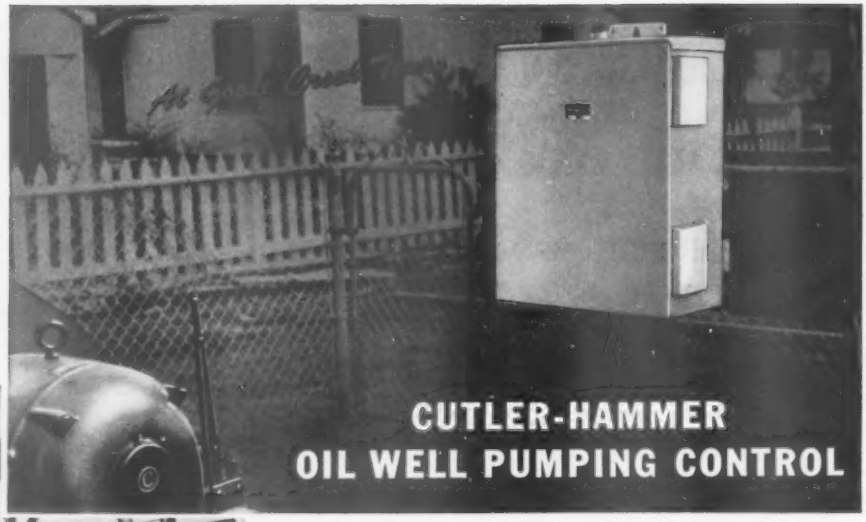
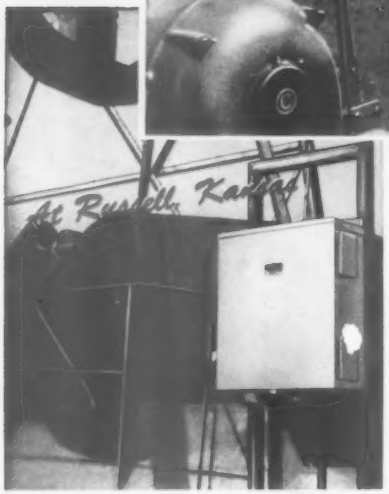
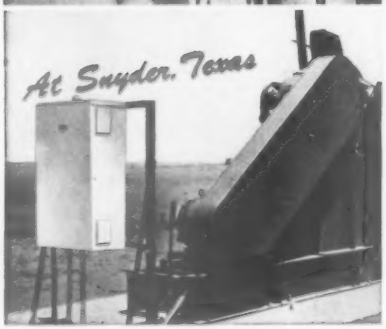


CUTLER-HAMMER OIL WELL PUMPING CONTROL





Built for the toughest conditions
Right for any conditions

It can truthfully be said the Cutler-Hammer Oil Well Pumping Control has been designed and built in response to the practical operating needs of the oil country. It has been built to withstand climatic extremes . . . hot, dusty, insect and storm prevalent conditions . . . or salt-laden, hot, humid atmospheres. It has the "stuff" to stand up anywhere.

The controller case has 4 openings for *adequate* ventilation. The aluminum painted case reflects the sun's heat. You don't have to prop the door open to dirt and insects to keep this starter cool.

The ventilators are fine mesh screened, louvered and plate-guarded to keep out dirt, dust and bugs. The vertical contacts shed dust. The timer case is neoprene-gasketed and dustproof . . . the clock motor has extra power—keeps on running—dependably.

Unit type lightning arresters show their condition at a glance.

If one blows, it's clean . . . you don't have to disassemble the starter to clean up afterwards. This control is available without undervoltage relay or *with* undervoltage relay, but the popular type with automatic staggered restarting requires no attention should power fail during a storm, because *proper* restarting is automatic in preset and adjustable intervals. Changes in pumping schedule are easy, accurate. Reset of timer clock is performed by turning a handy palm-sized dial. Wiring diagram with spare parts list and overload heater coil ratings is plastic-covered against grease, sweat, dirt, moisture and wear. These are but a few of the features that make the Cutler-Hammer Oil Well Pumping Control outstanding in the field. CUTLER-HAMMER, Inc., 1453 St. Paul Avenue, Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto, Ontario.

OTHER CUTLER-HAMMER PRODUCTS FOR THE INDUSTRY

Famous Cutler-Hammer UNITROL Control Center
Groups controls in one centralized, flexible housing. All parts interchangeable. Simplifies installation and wiring. Sections easily added. Simplifies servicing and insures better periodical inspection.

Bulletin 9586 Across the Line Starter
For standard or high torque polyphase squirrel cage motors. Famous features, *vertical* dust-safe contacts, eutectic alloy overload relay. Rugged construction, ample reserve. Dust-tight or water-tight enclosing case.

CUTLER-HAMMER
MOTOR CONTROL
C-H

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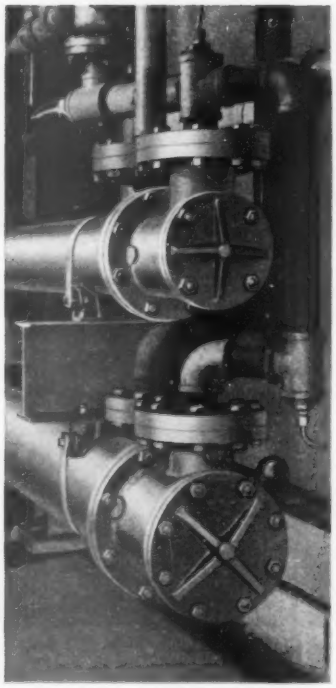
For these Superior Engines that feature only the best of protective devices . . .



(Upper) Two 260 bhp and three 390 bhp Superior Diesel Engines for driving pumps through speed increasers in fire pumping station, International Airport, Idlewild, Long Island.

(Lower) Ross Exchangers, for cooling lube oil and jacket water, located on the side of each of five Superior Diesels at Idlewild.

These lube oil and jacket water coolers, two of ten that provide temperature protection for five Superior Diesels driving the fire-fighting pumps at New York's International Airport, are the same shell and tube exchangers that protect numerous dual fuel engines built by The National Supply Company. *They are Ross Exchangers!*

Whether Superior Engines are to serve oil field, industry or municipal power plant, they are fitted only with the best of protective devices and equipment to assure dependable performance under all conditions.

Meticulous Ross engineering that has earned world-wide confidence . . . Ross standardization and mass production methods that save time and cost . . . have combined to establish the broad Ross Exchanger line as the consistent preference for all types and makes of original equipment: engines, compressors, turbines, speed increasers, hydraulic equipment, to mention some.

For machines that you build, or machines that you operate, it will be to your distinct advantage to keep up-to-date on Ross Exchangers by requesting current literature.

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EXCHANGERS
for lube oil and jacket water cooling

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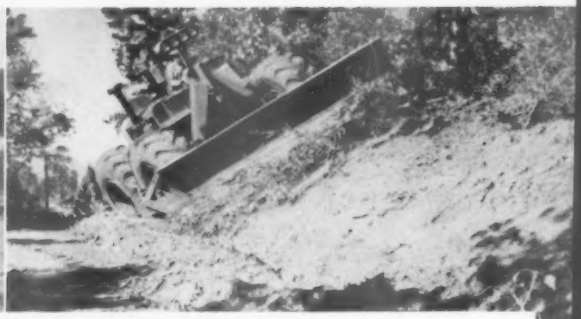
WAITING TIME *is*

Moving Equipment . . . Wherever pulling power is needed, you'll find Tournadozer handy for skidding pumps, generators around drill sites . . . pulling trailers, transporting heavy equipment and supplies. Also pulls Rooter, Scraper, Plows and other drawn units.



Service Road Maintenance . . . Because of its "get-about" ability, Tournadozer utilizes waiting time to keep haul roads free of holes, ruts, bumps . . . spreads surfacing. Here, Angledozer blade attachment is used to slope road shoulder.

Clearing . . . Tournadozer is a big time-saver on clearing operations. Its high speed gets you from job-to-job faster . . . clears more ground quicker. 186 horsepower behind 2½-yd. blade quickly clears roadways, pipeline right-of-ways, construction sites, etc.

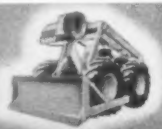
Building Fire Walls . . . Tournadozer's speed, power and mobility make it ideal for building fire walls, digging slush pits, etc. Big 21.00 x 25 low-pressure tires give ample flotation and traction for working in soft materials . . . take rig up steep, slippery grades.

Cleaning up Drill Sites . . . For faster leveling and cleaning up of drill and plant sites, you'll find this high-speed Tournadozer gets there fast . . . gets job done in less time, is ready for the next assignment more quickly than other dozers.

Backfilling Pipelines, Culverts . . . Tournadozer is at its best on any shuttle-type dirtmoving . . . has instantaneous speed selection . . . 19 m.p.h. forward and 8 m.p.h. reverse . . . completes dozing cycles about 3 times faster than most crawler dozers.

Tournadozer gives you oil field versatility

Side-Boom Crane



67,000 lb. Electric-Operated Winch

Angledozer Blade

Root Rake

WORKING TIME

with Tournadozer

Have you ever figured how much time is lost with a conventional dozer, either waiting for a flatbed, or crawling from one lease or drill site to the next? Waiting time, slow moves, costly delays can be turned into productive time, more work done, with today's high-speed, rubber-tired C Tournadozer.

This dozer *runs*, instead of crawls . . . travels 19 miles while old-style dozer crawls 4 to 8. What's more, Tournadozer's big 21.00 x 25 low-pressure tires let you travel over concrete, asphalt or macadam, instead of taking round-about, back-country routes. You save travel distance, as well as time . . . get there faster . . . get more work done.

Cuts non-productive time all-around

On the site, the "get-about" ability of the Tournadozer enables you to handle dozens of odd jobs. For example, it can travel ½ mile in less than 2 minutes cross country or over lease roads . . . gets there fast to dig slush pits, skid machinery, build firewalls or haul trailers. In addition, you'll always have good haul roads with one of these fast-stepping dozers on hand to run out at a moment's notice and clear a slide, fill mud-holes, widen shoulders, spread surfacing.

Travels 100′ while crawler shifts

Tournadozer not only gets places in less time . . . it does its work faster. Because of instant speed selection, Tournadozer travels 100′ while crawler shifts gears. 10 seconds saved on each gear shift, add up to a lot of extra production hours in a week's time. And, with 186 h.p. and 4-wheel drive on rubber, Tournadozer is twice as fast with a load. Then, too, Tournadozer backs up for each pass at speeds to 8 m.p.h. . . . cuts deadhead time in half. Find out what modern Tournadozer mobility, extra travel and working speed can do for you. See your LeTourneau Distributor today.

Travels, Works Anywhere

. . . over concrete, macadam, plant yards, through town, cross tracks, curbs . . . no waiting for flatbed or truck . . . just hop on and go at 19 m.p.h.

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Tournadozer, Angledozer, Rooter, Trademark Reg. U. S. Pat. Off. D-150-OL

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D-150-OL

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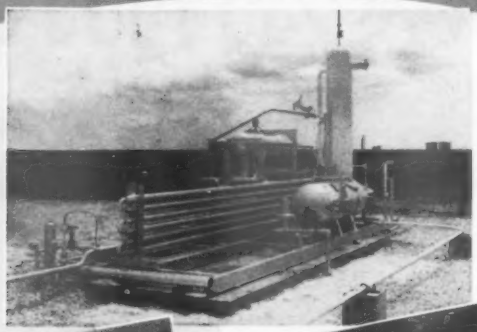
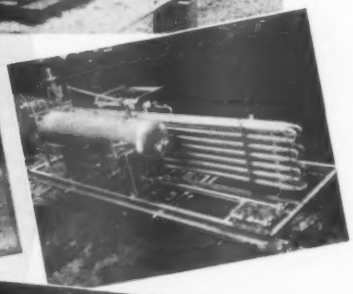
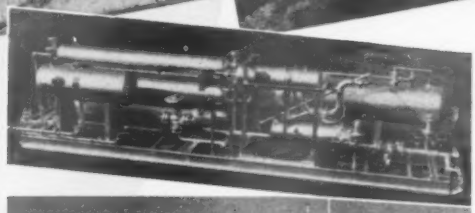
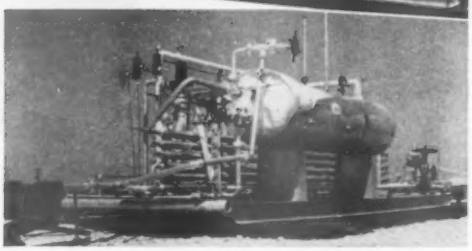
"IT PAYS TO PICK PARKERSBURG"

There's a HYRECO PROCESSING UNIT to meet *EVERY* Producing Condition









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Parkersburg Hyreco Units are available to meet every job from 2,000MCF per day normal readings, up to 20,000MCF, with larger capacities available on specific order.

For normal jobs Hyrecos are equipped with Hydracepter Liquid Knockout . . . where water-oil emulsions form in the liquid valve a special Hydraceptor Water Knockout can be supplied and emulsion prevented . . . or where emulsion must be combatted, concurrent with uncurtailed temperature reduction, a combination of both Liquid and Water Knockout operation can be provided.

Where sand or sediment conditions require, Hyreco can be equipped with a vertical Liquid Knockout. Hyreco Units are available in either T-Type or Horizontal high recovery separator design.

Ask your Parkersburg Representative about the Hyreco best suited to your gas producing problem.

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Manufactured in Houston, Texas

Want an oil seal that keeps out abrasives?

In oil field equipment, such as the Lufkin pumping unit (above) Johns-Manville Clipper Seals keep out blow sand and other abrasives that might seriously shorten bearing life. Left: Hammering a Clipper Seal into position. This can be done without harm to the seal, thanks to its tough, one-piece moulded body.

Clipper Seals did the job for Lufkin

One of the design problems Lufkin Foundry & Machine Co. encountered in their oil field pumping equipment was finding an oil seal that would completely exclude blow sand . . . prevent this and other harmful abrasives from entering the cavity and causing damage to bearings. This seal also had to be easy to install, and—equally important—capable of being removed without damage for bearing inspection once the equipment had been "run-in."

It was in Johns-Manville Clipper Seals that Lufkin found the combination of features they needed. Clipper Seals one-piece precision moulded body with its tough, dense heel provides just the right rigidity for a press fit in the cavity. The flexible lip, held in light but positive contact with the shaft by the specially designed garter spring, assures the efficient sealing action needed to keep damaging abrasives out and lubricants in.

And this moulded construction that provides such an effective sealing action also protects the seal against damage during installation and removal. Clipper Seals can be removed and replaced many times without impairing their original sealing efficiency.

Clipper Seals are made in both split and endless types for shafts from ¼" to 66" in diameter. A wide choice of lip designs and heel and lip compositions provides the answer to practically any sealing requirement. For further information, write for Brochure PK-46A. Address Johns-Manville, Box 60, New York 16, New York.

JOHNS-MANVILLE JM PRODUCTS

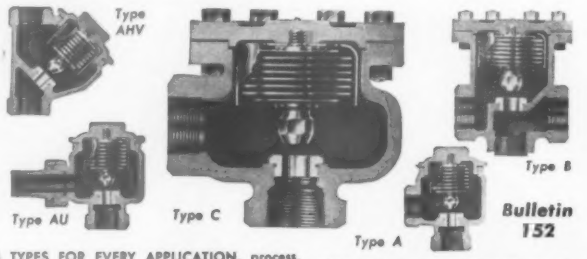
Johns-Manville CLIPPER SEALS

In This Plant Nicholson Traps

SAVE 10% IN STEAM COSTS

Chief Engineer H.F.D. stated, after Nicholsons replaced mechanical traps in his plant: "Saving in steam waste cut our fuel cost at least 10%. Yet application temperatures were up 30°-40°. And relief of all air binding effected faster warm-up."

Operate on lowest temperature differential; 2 to 6 times average drainage capacity; maximum air venting. For other advanced Nicholson features send for Bulletin 152.



5 TYPES FOR EVERY APPLICATION, process, heat, power. Sizes ¼" to 2"; pressures to 250 lbs.

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Uniquely designed for . . . Years of trouble-free operation • Minimum wearing parts • Maintenance accessibility • Compactness • Application flexibility • Operational safety. Combining these important features, SHORTSTIR Mixers have proved themselves in many different Oil Industry applications. To solve your mixing problems — install a SHORTSTIR.

*The original SHORTSTER Mixer, designed and manufactured by . . .

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SJR Sawyer-Jensen-Ross Co.

BOX 3156 WHITTIER STATION TULSA 4, OKLAHOMA

They Say—

Dangers of Regulation

"All those separate enactments (federal regulations), while illustrating the independent growth of our various types of transportation, have resulted in a hodgepodge of regulatory laws. Many of these laws have become outdated, some need remodeling, others need to be repealed. Restrictions that once may have been necessary have now become useless and burdensome.

"Unfortunately we do not give sufficient attention to government competition when it does not have a direct bearing on our type of business or employment. Too often we are ready to accept a program that may temporarily inflate profits in our own field, at the expense of the taxpayer, without making a searching analysis of the underlying factors and potential dangers.

"No industry can be immune once Government embarks on a program that might lead to nationalization."

J. L. Burke, president of Service Pipe Line Co., addressing the Intermountain Transportation Institute, Denver.

Danger of Overengineering

"Machines themselves seem to have ahead of them a future of increasing mechanical complications. The objective of the complications will be to obtain either operating ease or increased performance.

"If I may sound a warning . . . I should like to warn against the tendency of a few engineers to be hypnotized by the beauty of their own complications, and to lose sight of the main objective. There is such a thing as overengineering. We should always ask whether a new complication is worthwhile, particularly at a time when engineering complications cost rapidly increasing amounts of money.

"The United States is an outstanding nation of gadgeteers. As users, we are fascinated with gadgets; and to some engineers, the chance to devise one more gadget, either to replace a manual operation or to perform a completely new operation, is almost too intriguing to resist.

"True engineering does not necessarily mean increased complexity. The

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LEBUS GROOVING and WIRE LINE SPOOLING

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HANDLE-BAR "O" RING

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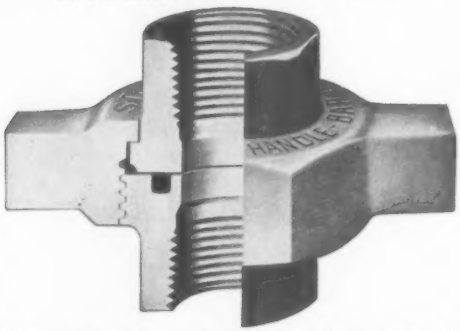

Hand tighten the nut and the pressure from within the line makes the seal with the "O" Ring between the two mating surfaces. The one and only sealing method that does not require brute force to make a tight joint on pressures to 3000 lbs. C.W.P., and temperatures to 212° F. Write for bulletin "O" Ring HB.

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"PETRO", the Prince of forged steel unions; faithful, trustworthy, and obedient to its sovereign owner. Permanently lubricated nut threads, cold rolled female seat. Pressures to 3000 lbs. Temperatures to 1000° F.

Write Department G for new illustrated catalog or refer to listings in Chemical Engineering Catalog pages 1120-1121, Composite Catalog pages 3140-3141 and Refinery Catalog page 653.

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1900 DEMPSTER STREET • EVANSTON, ILLINOIS

highest achievement would consist in eliminating the difficulties or situations requiring gadgets, rather than in inventing new gadgets to handle the trouble. The most satisfactory solution to the problem of the leaky fountain pen is not the introduction of rubber gloves.

"True needs must be met. But one of the toughest exercises in engineering judgment is that of determining whether an apparent problem should be wrestled with through the avenue of additional equipment and complexity, or whether it can be eliminated by simplification. This reminds me of my favorite definition of a good engineer—one who can draw sound conclusions from insufficient data!"

Robert E. Wilson, chairman of the board, Standard Oil Co. (Ind.), speaking in Chicago.

Market-Demand Proration Needed

"There are, I know, many who look on present conservation laws without any affection. They insist that the laws, because they gear production to reasonable market demand, are price-fixing devices, not conservation measures at all. It's an argument difficult to follow.

"What happens if supply is not kept reasonably in balance with demand? It is quite beyond debate that wild fluctuations in market prices of petroleum products such as we used to have injure the producer and the user alike. Boom or bust conditions have never promoted a healthy industry; and national security demands a healthy oil industry."

J. Ed Warren, deputy administrator of the Petroleum Administration for Defense, addressing the Mississippi-Alabama division of the Mid-Continent Oil and Gas Association, Biloxi, Miss.

International Irony

"The most ironic politico-legal act at Washington today consists of the Truman administration's indictment of seven great oil companies. . . .

"Although our top diplomat cannot afford to speak his mind publicly, it is known that he is extremely unsympathetic to Attorney General McGranery's interference in this dangerous and delicate international minefield. For it was the State Department which first forced these firms into Middle East operations as a measure of national defense.

"State has been kept fully informed of the very activities which Justice now declares to be illegal. At Ache-

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son's behest, the American firms named in the indictment have made sacrifices in order to cooperate with Anglo-American diplomatic efforts to keep the Russians out of this area by negotiating a settlement with Mossadegh. They have refused to buy and market Iranian oil.

"Thus, while the State Department allies itself with 10 Downing Street in trying to make a satisfactory deal . . . a cabinet member only a few blocks down Pennsylvania Avenue seeks to discredit the companies involved in the international feud."

Ray Tucker, Washington columnist.

CALENDAR OF EVENTS

NOV.

30-Dec. 5 American Society of Mechanical Engineers, Statler Hotel, New York City.

DEC.

1- 3 New Mexico Oil and Gas Association, annual meeting, Albuquerque.

1-6 American Society of Mechanical Engineers, twentieth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York.

4- 6 American Chemical Society, southwest regional meeting, Little Rock, Ark.

5- 6 Interstate Oil Compact Commission winter meeting, Wichita, Kans.

7-10 American Institute of Chemical Engineers, annual meeting, Hotel Cleveland (Hqs.) and Carter Hotel, Cleveland.

11-12 Texas Petroleum Research Committee, fifth oil-recovery conference, Memorial Student Center, A. & M. College of Texas, College Station.

1953

JAN.

8-9 Midwest Research Institute, symposium on automatic computing equipment, Kansas City.

19-20 Independent Petroleum Association of America executive committee, quarterly meeting, The Campbell House, Lexington, Ky.

19-22 Plant Maintenance Conference, Public Auditorium, Cleveland.

FEB.

2- 4 Missouri Petroleum Association convention, President Hotel, St. Louis.

2-6 Corrosion short course, sponsored by National Association of Corrosion Engineers, University of California, Berkeley.

16-19 American Institute of Mining and Metallurgical Engineers, annual meeting, Statler Hotel, Los Angeles.

WITH THE MEN THAT RUN 'EM

THE LELAND PACKAGED UNIT

The Leland "Packaged Unit" oil field truck body takes the "Blue-Ribbon" from the men in the field! For FLEXIBILITY WITH SAFETY, consider these important features — Manual locking device in tail roller . . . snatch block toggle in tail board . . . headache rack of heavy tubing . . . side recessed double gin pole pocket setting . . . heavy duty drill pipe gin poles . . . flush mounted body deck plate over rear half of body . . . 2" center matched hardwood flooring . . . winch mounting brackets and body clamping parts . . . clearance lamps and reflectors . . . one or two tool boxes.

Also at Leland the contractor finds the top names in all types of general contractors equipment. These lines, also, maintain their reputations by getting the job out when the chips are down. For "Blue-Ribbon" performance field and management men alike "LOOK TO LELAND."

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TULSA WINCH — Winches

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Jamaica
Caracas
C&S
CHICAGO & SOUTHERN AIR LINES
General Offices: Memphis 14, Tennessee
Branch Offices in Principal Oil Centers

27 Natural Gasoline Association of America, regional meeting, Scharbauer Hotel, Midland, Tex.

MAR.

2- 6 American Society for Testing Materials, spring meeting, Statler Hotel, Detroit.

4- 6 American Petroleum Institute, division of production, Southwestern district spring meeting, Hilton Hotel, Fort Worth.

8-11 American Institute of Chemical Engineers, Buena Vista Hotel, Biloxi, Miss.

15-17 American Petroleum Institute, division of production, Eastern district spring meeting, William Penn Hotel, Pittsburgh.

15-19 American Institute of Mining and Metallurgical Engineers, annual joint meeting of petroleum, metals, and mining branches, Statler Hotel, Los Angeles.

16-20 National Association of Corrosion Engineers, ninth annual conference and exhibition, Hotel Sherman, Chicago.

18-20 American Petroleum Institute, division of production, Mid-Continent district meeting Mayo Hotel, Tulsa.

23-25 Western Petroleum Refiners Association, annual meeting, Plaza Hotel, San Antonio, Tex.

23-26 American Association of Petroleum Geologists, Society of Economic Paleontologists and Mineralogists, and Society of Exploration Geophysicists, joint annual meeting, Sam Houston Coliseum, Houston.

30-31 Texas Independent Producers and Royalty Owners Association, annual meeting, San Antonio.

30-Apr. 1 Mid-West Gas Association, Broadmoor Hotel, Colorado Springs, Colo.

APR.

8-10 American Petroleum Institute, division of production, Eastern district meeting, William Penn Hotel, Pittsburgh.

15-17 National Petroleum Association, mid-year meeting, Cleveland.

21-23 Southwestern Gas Measurement Short Course, University of Oklahoma, Norman.

24-25 Interstate Oil Compact Commission, 1953 spring meeting, Roosevelt Hotel, New Orleans.

26-29 American Institute of Chemical Engineers, Chemical Institute of Canada, joint meeting, Royal York Hotel, Toronto, Ont.

27-28 Independent Petroleum Association of America, mid-year meeting, Jefferson Hotel, St. Louis.

Apr. 29-May 1 Natural Gasoline Association of America, annual convention, Rice Hotel, Houston.

MAY

4- 5 American Petroleum Institute, division of marketing, midyear meeting, Baker Hotel, Dallas.

7-8 American Petroleum Institute, Rocky Mountain district, Division of Production, spring meeting, Gladstone Hotel, Casper.

11-13 Southern Gas Association, Jung Hotel, Hotel, New Orleans.

14-23 International Petroleum Exposition, Tulsa.

24-27 American Gas Association, production and chemical conference, Hotel New Yorker, New York City.

28-29 Natural Gas and Petroleum Association of Canada, London, Ont.

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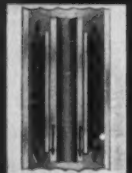
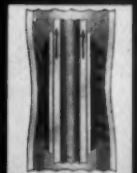
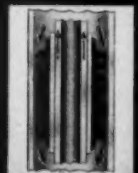


On the down stroke fins are in normal upturned position, allowing E-Z Swab to fall free.

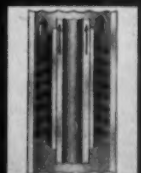
Flexibility of fins allows EZ Swab to pass smoothly through tight spots on up or down stroke.

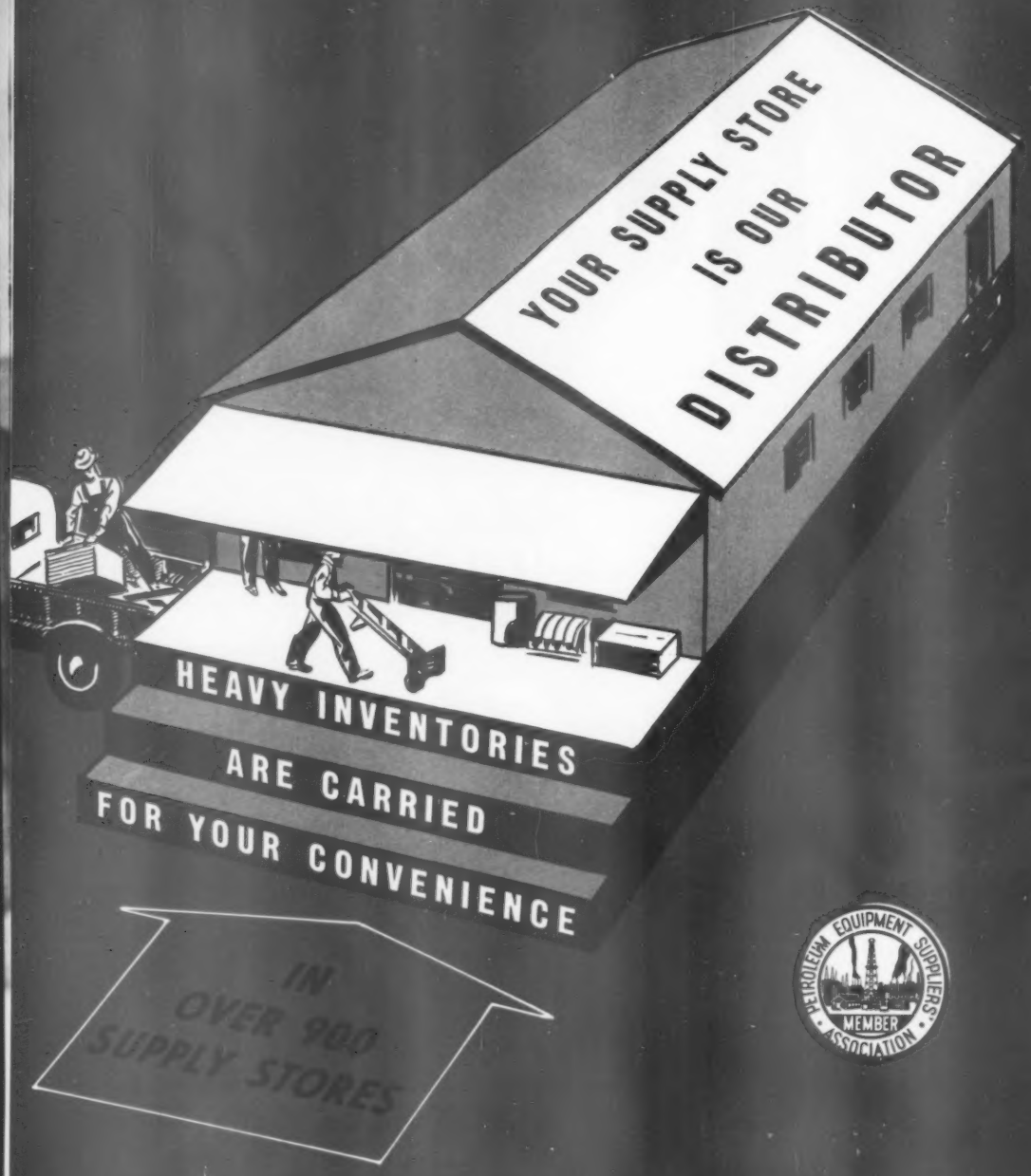




E-Z Swabs automatically by-pass fluid overload. Each rubber will lift approximately 400 feet of fluid. Rubber fins bend down and unload excess fluid.

After overload fluid is passed, fins spring up and seal against tubing.





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TULSA, OKLAHOMA

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JOURNALLY Speaking

Woolly Bears Again

THE woolly bears say this is going to be the coldest winter in the eastern states in 5 years, and we say nuts to the woolly bears. This department wrote off the woolly bears a couple of years ago.

Woolly bears, you may know, are a kind of caterpillar which crawl across roads in upstate New York in the fall. An old wives' tale has it that a narrow brown band on their backs foretells a hard winter, while a wide band means that mild weather is in store.

A few years ago some oil men turned to the woolly bears as authority after the industry's economists fizzled out in their attempts to forecast the winter demand for heating oil. But after watching the performance of the woolly bears for a few years we reached the conclusion that caterpillars don't know any more about the future of the oil business than oil men do. We'll stick with the old farmers' almanac.

Mathematical Alibi

SINCE the invention of the printing press, editors have been busy trying to explain away typographical errors, and the usual technique is to blame it on the typesetters. We recall that old classic about the editor who got run out of town because he described the G.A.R. parade as "battle scared" veterans and then when he tried to make amends with a correction his printer crossed him up by making it read "bottle scarred veterans." Or the similar fate which befell an editor who wrote: "We regret that in describing Mrs. Jones' party in last week's issue we said 'the roses were punk.' What we should have said was 'the noses were pink.'"

The best alibi we have seen we swiped from a newspaper column (which stole it from somebody else), as follows:

"In the average column of newspaper type there are perhaps 6,500 to 7,000 letters, arranged into 1,000 to 1,500 words. If one of these letters in one of those words is wrong, then it is an error and somebody will be bound to notice it. Just to show you what the odds against a perfect paper are, did you know that in the phrase 'to be or not to be' you can make 2,759,022 errors by transposition of letters alone? It's a wonder we do as well as we do."

Our mathematical ability is too limited to check the accuracy of this computation but just offhand it seems a bit on the high side, because we have never known our own compositors to make quite that many mistakes in a single line. But if you add in the factor of mistakes that editors (theoretically) could make in the original copy, the odds against perfection may be well up in the millions.

More on Names

OUR recent discourse on oil-company names elicited a letter from a reader, to-wit:

"Suppose you never heard of the 'Black Label Oil Co.' a small corporation which sold out a few years ago. When the company was being formed one night in a Montana hotel room the contents of a bottle of a certain popular brand of beverage disappeared in the approved manner. About that time the matter of a name for the new corporation came up for decision. Yes, you guessed it."

That reminds us of the legend of a "Crapshooter Oil Co," said to have been named because the organizer raised their initial capital by means of a game of chance. However, there are old timers in the industry who say there never was any such company, and that the legend arose from mispronounciation of a real concern, Trapshooter Oil Co., legitimately formed by a group of sportsmen and named after their favorite hobby.

Doubtless the history of the industry would disclose many even odder names for ventures long since forgotten. Digging them out would be an amusing, albeit not very useful, research project if anybody wanted to take the time to do it.

Henry D. Ralph

More POWER *to You* THIS WINTER

NATURAL GASOLINE
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ISO-BUTANE
BUTANE
ISO-PENTANE
NORMAL PENTANE
HEXANE
HEPTANE
HEAVY NAPHTHA
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Long-haired research pays off in oil

SPENDING $600,000 a year for something with no direct practical value whatever may sound like a screw-ball activity for a trade association of hard-headed business men, but that's the annual budget of the American Petroleum Institute for fundamental research.

One of the basic rules for spending this money is that the projects must not have any immediate application to any problem of the industry or be of any special value to any company which puts up the money. Every year dozens of proposed projects are turned down because they might have some industrial application. The money goes for pure science, of the variety sometimes called long-haired.

This has been going on for 25 years, but instead of getting tired of it the contributing oil companies keep adding more to the fund. Why? Because much of its basic research produced findings which saved millions of dollars and millions of barrels of oil.

IN addition to this A.P.I. fund for fundamental research, individual oil companies spend more than $100,000,000 a year for scientific research of all kinds. Most of this is devoted to making practical and immediate application of the findings of pure science, and this makes the fundamental research pay handsome dividends. To cite but one example, the aviation gasoline of World War II was made possible because of the A.P.I. findings about the basic nature of hydrocarbon molecules.

Probably no industry in the world draws on the knowledge of a greater variety of sciences than does the petroleum industry. The practical application of pure science has benefited the industry and its customers in countless ways. It has enabled the industry to find more oil, drill deeper, get more oil out of the reservoirs, refine more efficiently, and make better products.

But oil men are nowhere near satisfied with their progress. Every new finding opens additional vistas for experimentation, whets the urge to find still better ways of doing things. They realize that they don't know half of what they would like to know about the occurrence and nature of petroleum, so research programs keep expanding.

IT is not altruism that causes oil companies to spend money on scientific research, even the long-haired kind. Contribution to the world's store of academic knowledge is only an incidental byproduct. The driving force behind it is the profit motive, the urge to get ahead by doing a better job through greater knowledge.

So long as the oil industry is encouraged to spend money for pure and applied research and to experiment with practical uses of its findings, the nation can be assured that its priceless resource, petroleum, will be available in ample quantities and more useful forms.

Now—Anchor markets petroleum products

all over America!

Across the nation Anchor tank cars are fast becoming a familiar part of the scenery—that's because Anchor's facilities have expanded and now cover all 48 states. You've got to be good to grow like Anchor—our customers and suppliers believe that we are . . . they know that they can depend on Anchor whether buying or selling petroleum products. Yes, Anchor's strategically located distribution points guarantee fast service to our customers and a dependable outlet for our suppliers—All over America!

AnchorGas

ANCHOR

PETROLEUM COMPANY TULSA

SALES OFFICES: DES MOINES, OMAHA, TOLEDO, HOUSTON, LOS ANGELES

THIS WEEK

INDUSTRY.—Hearing on proposed Scurry County, Texas, Canyon reef unit continues before Texas Railroad Commission with strong support from participating companies. . . . If approved, unit will go into operation within a few weeks as world's largest secondary-recovery operation. . . . ¶Carbon dioxide offers "promising possibilities" in water flooding of limestone reservoirs, A.I.M.E. group told. . . . ¶Wildcatting still running ahead of last year, study shows. . . . Total exploratory-well completions may exceed forecast by end of year. . . . ¶Southern Production Co. offers $80,000,000 for all assets of Texas Pacific Coal & Oil. . . .

GOVERNMENT.—Trend in new Congress expected to be away from controls, regulations, and business straitjackets. . . . New men and new views will dominate committees with influence over oil industry. . . . ¶I.P.A.A. appeals to Interior Secretary Chapman to act on Price Director Tighe Woods' refusal to raise or eliminate crude-oil ceiling prices. . . . New, but different, investigation of petroleum industry scheduled with advent of Republican-controlled Congress. . . . Rep. Charles Wolverton of Interstate Commerce Committee says he plans a hearing requiring government regulatory bodies to "justify the restrictions" imposed on industry, charging excessive restrictions are dulling free enterprise. . . .

THE FINAL WELD in the 1,100-mile Platte pipe line is being made as company and contracting officials look on. Left to right in the background are A. A. Carrigan, spread superintendent for R. H. Fulton Construction Co. being congratulated by Millard K. Neptune, president of Platte Pipe Line Co., and R. A. Miller, Jr., Platte superintendent of pipe-line construction, and Willie Duzan, chief inspector for Platte. The Journal next week will print a special section of six articles on the important new line which moves crude oil from Wyoming's Big Horn basin to Wood River, Ill., making Rocky Mountain crude for the first time competitive with Texas and Mid-Continent crude in Midwest refining centers.

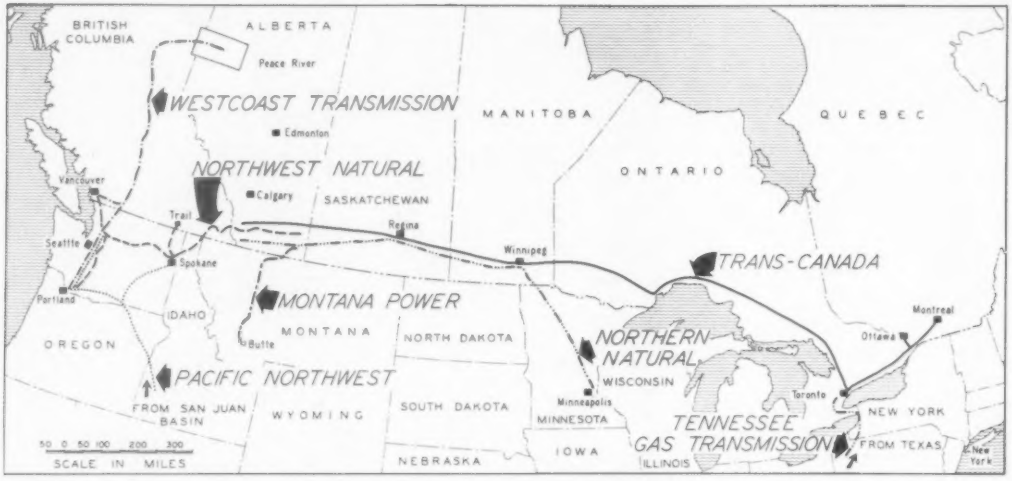
NATURAL GAS.—Showdown awaited on authority of Federal Power Commission to control natural-gas production. . . . FPC has charged Northern Natural with violating its orders not to transfer its reserves. . . . The company, saying FPC has no jurisdiction over producing and gathering, formed a subsidiary and transferred its production and leases. . . . ¶New process for making carbon black claimed to be more efficient and cheaper than channel and furnace methods. . . . ¶New York draws up new "safety" code for gas companies distributing in state. . . . Cost of compliance with requirements estimated at $6,000,000, not including interstate companies. . . .

PIPE LINES.—Plantation Pipe Line gets PAD approval on proposal to increase capacity of its Baton Rouge-Greensboro, N. C., products line. . . . ¶Barge operators announce they will protest U. S. Pipe Line's proposed guaranteed-tender contracts for its products line planned between Beaumont, Tex., and Newark, N. J. . . . ¶Continental buys 27-mile, 4-in. crude line from Sunray, will use it to carry crude to expanding Lake Charles refinery. . . .

ACTIVITY.—Production of crude and lease condensate averaged 6,637,125 bbl. daily for week ended November 15, down 3,250 bbl. from the previous week for the first recorded drop since August 30. . . . ¶Total well completions for the week increased 43 wells to 922. . . . Wildcat completions totaled 216, compared with 217 for previous week and 235 for same week last year. . . . ¶Rotary rigs operating in United States gained 49 rigs for week ended November 17 to 2,676. . . .

INTERNATIONAL.—Regulations implementing the new Israeli petroleum law now awaiting final approval of the Israeli minister of finance. . . . ¶Anglo-Iranian and Israeli Government near agreement for the continued operation of the 85,000-bbl. Haifa, Israeli, refinery. . . . ¶Initial construction begun on new 100,000-bbl. Anglo-Iranian refinery at Aden on the Red Sea. . . . Completion is expected in 2 years. . . . ¶British refinery capacity in the United Kingdom will reach nearly 530,000 bbl. daily early next year, latest estimates show. . . . Tremendous refinery expansion makes Britain the largest refining country in Europe. . . .

TRENDS.—The latest comparable breakdown of product inventories between California and the areas to the east of that refining area showed the following percentage changes over year ago: Gasoline, California minus 1.2, East plus 1.9; kerosine, California minus 41, East minus 5; distillates, California plus 37, East plus 7; residual fuel oil, California plus 34, East minus 1.8. . . . ¶Market prices generally were unchanged over past week with kerosine the strongest product and residual fuels the weakest.



THE PRIZE of Alberta's gas was sought by these contestants last year. With the Westcoast project approved, the two lines proposed to run eastward probably will be the main contenders for the next export permit.

More Gas From Alberta

By spring the province may permit additional exports; speculation points to one new line running to the east

Henry D. Ralph

THE huge locked-up reserves of natural gas in southern Alberta are due to find a market outlet to the east within the coming year, it is generally agreed, and it is beginning to look as though the two principal contenders for pipe-line approval may get together on a single project.

One of these proposals is for an all-Canadian line to serve the populous centers of central and eastern Canada. The other proposes to cross the United States border and deliver gas to Minnesota and Iowa. A combination of political and economic pressures may determine whether one proposal wins out over the other, or whether the two are combined.

Next April, according to the present schedule, the Alberta Petroleum and Natural Gas Board will take another look at the province's natural-gas reserves and hear applicants for export permits. Virtually everyone anticipates that the board will find that there is enough gas to support a big transmission line.

The line won't go west, because the Pacific Coast is now virtually assured of gas service—barring some unforeseen hitch. Both economics and politics indicate that it will go to the big markets to the east, and that the biggest reserve of uncommitted gas on the continent will soon begin to move.

Reserves shut in . . . Alberta's gas reserves, estimated at 7 to 10 trillion cubic feet, are largely shut in because the province prohibits export of gas except that surplus to its own anticipated requirements.

Except for two limited permits, the Alberta Conservation Board permitted no gas exports until last March, when it authorized Westcoast Transmission Co., Ltd., to construct a line from the Peace River area of northern Alberta southwest through British Columbia to Vancouver and into the Seattle-Portland area of the United States.

A half-dozen other applicants for export permits were told to try again a year later. Since then the gas reserves of southern and central Alberta have been growing rapidly, and so have the economic and political pressures for additional exports. Alberta producers are most anxious to sell more gas than local markets can absorb, and would-be consuming areas are demanding that Alberta share her resource.

These pressures will reach a high point in April when the Alberta board reopens the subject, but the problem should be far less complicated than it was last spring.

Companies involved . . . Westcoast Transmission Co. is no longer a contender, since it has all the Canadian authorization it needs.

It is awaiting approval from the Federal Power Commission in Washington for construction of the United States portion of its line between Vancouver and Portland, and its fight there is with Pacific Northwest Pipe Line Corp., an American concern which proposes to build a gas line to Portland and Seattle from the San Juan basin of New Mexico and Colorado. *(The Oil and Gas Journal, October 20, page 85.)*

Last year Pacific Northwest itself was an applicant before the Alberta board, through Prairie Pipe Lines, Ltd., and Prairie Transmission Lines, Ltd., with a project to trade Alberta and Texas gas in serving both eastern Canada and the Pacific Coast, but the backers of this scheme are now concentrating their efforts on the San Juan basin project.

Another strong contender last year which probably is now out of the picture was Northwest Natural Gas Co., a firm organized by A. Faison Dixon of the New York engineering firm of Brokaw, Dixon & McKee. It proposed a line from southern Alberta to Vancouver, Seattle, and Portland, running mostly through the United States to

avoid the Canadian Rockies. Since the board has already assigned northern Alberta gas to the Pacific Coast via Westcoast Transmission, the Northwest Natural project would appear to be dead.

Probably still in the picture is Montana Power Corp., which now has a limited, 5-year export permit to take Alberta gas into its system for delivery to the copper smelter at Butte as an emergency defense measure. Operating through the affiliated Canadian Montana Pipe Lines and Glacier Gas Co., and with the backing of some big Alberta oil producers, the company is trying to line up gas reserves in Alberta in the hope of having its export permit expanded and extended.

Major contenders . . . But the big pressure will come from the backers of two proposals to move gas eastward.

One of these is Trans-Canada Pipe Lines, Ltd., a subsidiary of Canadian Delhi Oil, Ltd., which in turn is a subsidiary of Delhi Oil Corp. of Dallas. This concern has completed engineering designs for a trunk line of 14-in. to 30-in. pipe extending 2,250 miles east from Alberta to serve Regina, Winnipeg, Toronto, Ottawa, and Montreal. A gathering system of 750 miles in Alberta would link up 34 gas fields and deliver 346,000,000 cu. ft. per day. The cost of this project is estimated at between $250,000,000 and $300,000,000.

The other is Northern Natural Gas Co., of Omaha, which seeks to export Alberta gas to link up with the northern terminus of its line near Minneapolis to augment supplies for its present customers in that area now served with gas from Kansas, Oklahoma, and Texas. It is teamed up with Western Pipe Lines, a nonaffiliated Canadian corporation, and the Husky Oil & Refining, Ltd., and Calgary & Edmonton Corp., Ltd., both of which have gas reserves in Alberta. *(The Oil and Gas Journal, November 3, page 69.)*

The plan is to run a 24-in. transmission line from Pincher Creek field in the extreme southwest corner of Alberta, 833 miles east through Regina to Winnipeg to serve those areas and cities along the route. From Winnipeg a line would run south to Emerson, Man., at the United States border, where Northern Natural would connect with a 24-in. line to run 400 miles south to Minneapolis to carry 150,000,000 cu. ft. per day.

FPC involvement . . . In addition to applying to the Alberta Conservation Board last spring, all these interests were parties to a free-for-all proceeding before the Federal Power Commission in Washington in June.

Since no one of them at that time could prove that it had a firm supply of gas committed to its project, the FPC suspended hearings without taking any action.

Trans-Canada was in that FPC omnibus case not because it proposes any construction in the United States but because it opposed any other project drawing on gas it hoped to get and also because of still another factor in the Canadian-gas picture. This is Tennessee Gas Transmission Co., which has a line from Texas to western New York State and which wants to cross the international border and serve eastern Canada through a subsidiary, Niagara Gas Transmission, Ltd. This project is in suspense at present.

What to expect . . . So when the Alberta board meets next spring it will be faced with both economic and political considerations.

Economics suggests that the international border be ignored, or that natural gas be "traded" between the two countries. The natural market for Alberta gas would seem to be the prairie provinces of Saskatchewan and Manitoba, and the North Central United States. Because of the long unpopulated stretch of rocks and wilderness north of the Great Lakes through which the Trans-Canada line would have to pass, it would seem more economic for eastern Canada to use Texas gas which is already at its doorstep.

But politics suggests keeping Canadian gas in Canada. Eastern Canadians have expressed apprehension about being on the "tail end" of a long line from Texas passing through many actual and potential markets in a foreign country which might, in a few years, demand and get all the gas the line could carry, thus leaving Ontario and Quebec literally and figuratively in the cold.

This situation could set the stage for some high-powered political intrigue and high-level diplomatic maneuvering, but most observers don't expect this to happen. Because Canada and the United States have always settled their joint problems quietly and sanely, they anticipate that economics will triumph over politics.

What is expected is that the Alberta board will grant one export permit for gas to move eastward; that the interests backing both Trans-Canada and Western Pipe Lines will combine to build a line initially as far as Winnipeg; and that the export of additional gas and the extension of this line either east or south will be left for the future.

As for the future, they expect that diplomatic exchanges will confirm that contracts to send gas across the international border in either direction will be honored without question, and that, as gas production increases in both areas, Gulf Coast gas will find a natural market in eastern Canada and Alberta gas will cross into northern United States.

Manitoba Strike

Williston test near border swabbing 20 bbl. per hour

WINNIPEG, Man. — Pascar Oils, Ltd., reports that its Coulter area Mississippian discovery in southwestern Manitoba has swabbed 34°-gravity oil at a rate of more than 20 bbl. per hour.

The 1 Westover, LSD 1, 21-1-27w1, is 4 miles north of the International border and 15 miles east of the Saskatchewan border. As in all Manitoba discoveries to date, production at 1 Westover is from the Mississippian, probably Madison, at about 3,200 ft.

This new discovery, 15 miles northwest of the recently opened Waskada pool, is the province's fifth Williston basin strike to date. Other producing areas in the province's Williston area are: Virden, Waskada, Tilston, and the recent Hargrave discovery 6 miles north of Virden pool.

Wildcat flurry . . . In North Dakota's Bottineau County, just south of this Canadian discovery area, Zack Brooks-Crawford Smith and Ray Murray-M. B. Monson each has made location for a wildcat.

The outcome of these important tests will determine the possibility of more oil production in North Dakota areas away from the Nesson anticline production.

New Socony Discovery

REGINA, Sask. — Socony-Vacuum Exploration Co. et al Ratcliff area wildcat in southern Saskatchewan has flowed oil in commercial quantities on test of Mississippian formations.

This Williston basin discovery flowed 120 bbl. of oil and an equal amount of water following acidization of the interval from 6,349-82 ft. The well flowed 100 bbl. of oil and 100 bbl. of water daily on an earlier test from 6,442-46 ft. in the Mississippian, probably Madison. The operator is continuing tests.

The Ratcliff area discovery is 5 miles north of Divide County, North Dakota, about 65 miles north of Beaver Lodge, and 80 miles northeast of East Poplar field, Montana.

This is the first report of recovery

of commercial quantities of oil at the wildcat. First shows at the discovery were reported in June of this year, creating an intensive lease play in Sheridan and Daniels counties, Montana, and Divide County, North Dakota. One wildcat now is drilling in Daniels County, and Hunt Oil Co. recently completed dry a test in Sheridan County.

Revenue Climbing

Alberta nets $6,041,598 in most-recent lease sale

EDMONTON, Alta. — Most recent sale of petroleum and natural-gas leases has netted the Alberta government $6,041,598.

With proceeds from two previous sales, the government's take from this source this year comes to $21,975,166.

I. N. McKinnon, chairman of Alberta's Petroleum and Natural Gas Conservation Board, said recently that Alberta has collected more than $150,000,000 in revenues from oil and gas production in the last 5½ years.

Shell offer top . . . In the most recent government auction, Shell Oil Co. paid top price of $712,640 for rights on a half section in the Big Valley area of central Alberta. Shell also paid $552,640 for a second Big Valley half section, and more than $400,000 for a parcel of land in the Malmo district.

Other large prices paid were: Calvan Consolidated Oil & Gas, Ltd., $402,830 for a quarter section near Mulhurst; Texaco Exploration, $327,000 for a parcel in the Camrose area, and $426,000 for a half section in Rimbey area; Mill City Petroleums, $241,011 for a parcel in the Leduc area; Imperial Oil, Ltd., $201,153 for a parcel in the Armena area; Home Oil, $173,506 for Malmo parcel; Ross Oils of Alberta, $143,777 for Leduc parcel; West Canadian Petroleums, $106,503 for Leduc parcel.

Refinery Nearing Completion

FORT WILLIAM, Ont.—Riverlake Oils Ltd. is nearing completion of a $1,000,000, 4,000-bbl. per day refinery here. The plant is composed largely of equipment from a small Texas refinery which was shipped by water to the Lake Superior port, northeast of Duluth, Minn.

Operations are scheduled to commence in early December. The plant will produce gasoline and diesel and burner fuels for the local market. R. J. Christian, formerly general manager of Anglo-Canadian Oils, Ltd., is president of the new company.

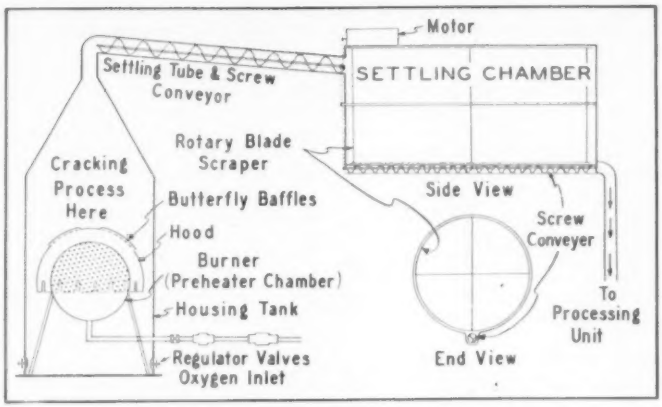


DIAGRAM showing plan of the Lynn carbon-black process.

New Black Process

Low-cost, highly efficient method for making carbon black claimed by designer; process would utilize gas now wasted

SAN ANGELO, Tex.—A cheaper and more efficient process for making carbon black is claimed by R. P. Lynn, president of Lynn Carbon Black Co., Inc.

Utilizing flare gas from oil fields, the process will recover as much as 16 lb. of carbon black per M.c.f., according to Lynn, compared with about 2.2 lb. by the channel method and 7 lb. by the best furnace methods.

One of the biggest advantages claimed for the new process is its low cost. Lynn estimates that a small commercial unit can be built for as little as $25,000, making it attractive in flare-gas recovery.

How it works . . . Design of the new process is simple. Burning takes place in a spherical chamber surmounted by a hemispherical hood which permits oxygen to enter the burning space.

The carbon black is carried overhead into a settling tube equipped with a screw conveyor and from there into a settling chamber with an internal scraper.

The process, once started, is completely automatic, according to Lynn. One man can operate any number of units within a 100-mile radius. Also, a single $25,000 plant could be dismantled and moved to a new location within a few hours, the company president said.

Key equipment . . . Heart of the system is a spherical chamber, either steel or cast, which can be 14 in. in diameter or larger, depending upon the gas volume.

Gas enters the chamber after passing through a water trap and cleaner, if necessary, and then through two regulators which reduce it in pressure to 12 and then 2 oz. The sensitive 2-oz. regulator reduces the incoming gas to almost atmospheric pressure as it enters the burning chamber.

The chamber then acts as a preheater and expansion chamber to heat the gas before burning begins. Lynn claims this controlled preheating is one of the key efficiency points of the process.

The spherical chamber also acts as a starting burner to form carbon black. Outlets for the gas are holes drilled in the top half of the sphere in a staggered pattern. The holes taper from ⅛ in. in diameter on the chamber side to ½ in. on the outlet side.

Hood design . . . The hemispherical hood is mounted about 3 in. from the chamber surface. It is perforated in a four-leaf-clover pattern from the top downward with each leaf being raised and shortened. The bottom 6 in. of the hood has evenly spaced slits around the periphery. These slits permit oxygen to enter, which is needed for combustion.

Both the chamber and the hood are enclosed in a large metal drum with a conical top in which the carbon black forms.

Gas rising from the hood undergoes secondary combustion, and the carbon black formed is carried into a 21-in. pipe containing a long pitch screw conveyor. This conveyor is slanted downward and is 100 ft. or more long, depending on the size of the burner.

Recovery unit . . . The pipe passes into a settling drum about 6 ft. in diameter and equipped with a slowly revolving rotary scraper. From the bottom of the drum the product is moved by a screw conveyor to an outlet from which it may be carried directly to processing units or to storage.

The conveyors and scrapers are chain driven by a variable-speed motor. Inlet oxygen is controlled by regulating the speed of the primary long-pitch screw conveyor.

Experimental work on the process was done in Jameson field of Coke County, Texas, which was developed by Sun Oil Co.

Advantages . . . Lynn claims these advantages in his process:

1. Little smoke loss. He states the process will use either wet or process stripped gas, with wet gas giving about a 20 per cent greater recovery.
2. Simplified operation. Individual plants can be set up in many adjacent fields with one operator attending to their collective operations.
3. Inexpensive. The $25,000 estimated cost for a small-size commercial unit makes it attractive for recovering flare gas.
4. Control of preheating to obtain maximum efficiency.

New Water-Flood Aid

Use of carbon dioxide in injection water holds promise for limestone reservoirs, Torrey tells A.I.M.E. meeting

Joseph A. Kornfeld

PONCA CITY, Okla. — Water solutions of carbon dioxide as a flooding medium for secondary-recovery operations in limestone reservoirs offer "prominent possibilities for additional oil recovery," Paul D. Torrey, Austin, Tex., petroleum engineer, said here last week.

In an address before the Mid-Continent section of the American Institute of Mining and Metallurgical Engineers, Torrey said that the greatest application of this method might be in the limestone reservoirs of the Permian basin, where only a small fraction of thick over-all pay sections actually contribute to a well's productivity.

Citing a laboratory experiment on limestone cores, he said that the use of carbonic acid flood waters increased the air permeability from 18 to 180 md. with an increase in porosity of only from 11 to 12 per cent.

The cost of generating carbon dioxide gas, ranging from 40 to 50 cents per M.c.f., would prevent its use in small projects. Gas generating would have to be kept at a minimum, Torrey said, and this would require recovery of carbon dioxide from produced water for reinjection.

Early application important . . . He advocated the application of carbonic acid treated flood waters at the beginning of a water flood so that an oil-bank could be created ahead of the water flood to ease the movement of oil through the reservoir rock.

Torrey said that he knew of no chemical that could be added to the reservoir in a watered-out oil field. He explained that the relative permeability of the rock to water is so high and that the relative permeability to oil is so low in a watered-out field that any oil would be produced at "prohibitive water-oil ratios."

He said that experiments conducted to date suggest that organic acids, such as propionic acid and butyric acid, formed by reactions between isomeric hydrocarbons and carbon dioxide, "may be giving us the results that we are experiencing." Precipitation of unstable compounds such as barium propanate complicated producing operations by plugging up separators and flow lines, he said.

Injection gas application . . . Carbon dioxide gas offers another application toward increasing oil recovery as an additive to injection gas. This use would increase the solubility of natural gas in crude oil and bring about marked reductions in reservoir crude viscosity. Viscosity reduction and permeability improvement of the reservoir rock, he said, offers two major possibilities for additional recovery from oil fields.

He said that laboratory experiments conducted at a pressure of 1,000 psig. with a lean gas (90 per cent methane) carrying carbon dioxide doubled the gas solubility of a particular crude oil over solubility exhibited without carbon dioxide.

Solution of 2,800 cu. ft. of rich natural gas carrying carbon dioxide in a barrel of oil reduced the viscosity in one experiment to less than 10 per cent of values noted without carbon dioxide, Torrey added.

Limited application . . . Carbon dioxide cannot be used successfully in all crude oils or in all reservoirs, Torrey said. His data to date are limited to use of five different natural gases dissolved in a single type of crude oil. However, he said, laboratory experiments to date should "stimulate additional research in the use of carbon dioxide for gas-injection applications."

He said that the use of liquid carbon dioxide for stimulating oil recovery "has given very negative results."

Top Officials of the American Petroleum Institute

Snapped at the close of the recent A.P.I. meeting in Chicago were, left to right, John G. Newton, Magnolia Petroleum Co., Beaumont, vice president for refining; L. S. Wescoat, Pure Oil Co., Chicago, chairman of the board; John G. Pew, Sun Oil Co., Philadelphia, vice president for production; and Frank Porter, Fain-Porter Drilling Co., Oklahoma City, president. Not shown are Robert M. Bartlett, Gulf Oil Corp., Pittsburgh, newly elected vice president for marketing, and P. C. Spencer, Sinclair Oil Corp., New York, who was reelected vice president for transportation.

Scurry Unit Supported

Lion and Phillips lead testimony before Texas Railroad Commission asking approval of secondary-recovery plan

AUSTIN.—Strong support of the plan to unitize Kelly Snyder and part of Diamond M fields of Scurry County was heard here last week by the Texas Railroad Commission at a hearing on the unitization application.

Principal testimony on behalf of the unit proposal was from representatives of Phillips Petroleum Co. and Lion Oil Co., which is operator of the big unit covering the south two-thirds of Diamond M field.

The plan being considered by the commission calls for combined water and gas injection into the Canyon Reef reservoir. The unit would cover an area of more than 47,000 acres on which there are now more than 1,200 productive wells. The petition for unitization contained signatures representing more than 90 per cent of the combined ownership of the oil involved.

Plan supported . . . Lion's statement said its secondary-recovery operation in the adjacent unitized Diamond M area is proving highly successful. The Canyon lime is suited to water injection as proposed, it said, and it recommended that a unitization permit be granted.

A Phillips Petroleum Co. representative told the commission that the increase in oil recovery obtained through the unit plan would "yield adequate compensation for both the costs of the proposed project and the temporary loss in current income."

Extended negotiation, the statement added, would be detrimental "because past field performance demonstrates that waste will occur in substantial and in increasing quantity under continuation of present operations."

Suit threatened . . . Gillis Johnson, attorney for W. A. Moncrief and others, earlier in the week indicated he might seek a court ruling on the question of whether the unit applicants are required to show at the hearing that the interests of nonsigners of the unit application will be protected.

Johnson had objected that while the applicants had offered "a conclusion that interests of nonsigners will be protected" this was not possible until the injection wells had been located and it had been determined how much water would be injected in each well.

William L. Horner, vice president of Sunray Oil Corp., leading company in the unitization drive, said the injection-well locations would not be determined until it is definitely known how many tracts will participate in the unit. J. A. Rauhut, Sunray attorney, declared the nonsigners' interests would be fully protected since the Railroad Commission must conduct a hearing before approving the location of the injection wells and that any objections would be heard at that time.

Petition supporters . . . Besides Phillips and Lion, others supporting the petition submitted by Sunray and Magnolia Petroleum Co. before the commission, either in person or by telegram, included: Hunt Oil Co., Louise W. Hunter and J. R. Hunter Estate, Southern Production Co., Three States Natural Gas Co., Southland Royalty Co., Stroube Oil Co., Carter & Mandel Co., Republic National Bank of Dallas, Seaboard Oil Co., Jake L. Hamon, Gene Goff, Strebor Oil Co., and Foster Petroleum Co.

Texas Allowable Cut

Operators' anxiety over possible surplus of stocks spurs commission to shave December output by 66,482 bbl. daily

AUSTIN.—The Texas Railroad Commission has cut back allowable crude production in Texas for December by 66,482 bbl. daily after three consecutive months of record high production.

Daily production rate for December was set at 3,305,770 bbl. The cutback, the first since last July, was effected by holding constant the number of producing days for the state generally at 23. This reduces the daily allowable since there is one more calendar day in December. East Texas field will be allowed to produce 19 days—one more than in November.

Fearful over stocks . . . It was apparent at the hearing that several of the companies are worried considerably over the possibility that a heavy surplus of crude and products stocks may crop up if production is not cut back sharply.

Operators' recommendations for the production formula for December ranged all the way from 23-19 pattern adopted to a 20-18 day schedule favored by Ralph Dietler, of Stanolind Oil & Gas Co.

Dietler said Stanolind still believes there is an excess of crude and products in storage. He said crude stocks now have climbed to 268,000,000 bbl., a gain of 12,000,000 bbl. over January 1, and that stocks of the four principal products are 327,000,000 bbl., up 52,250,000 bbl. over January 1.

On questioning by Commissioners Olin Culberson and Ernest O. Thompson, Dietler admitted that demand for heating oil is estimated to be 17 per cent higher this year and that so far stocks have not climbed that much. However, he said, these figures are misleading since there has not yet been enough cold weather in the East to prod users into filling their tanks.

Commission viewpoint . . . The Railroad Commission, on the other hand, appeared more fearful of a heating-oil shortage than of over production.

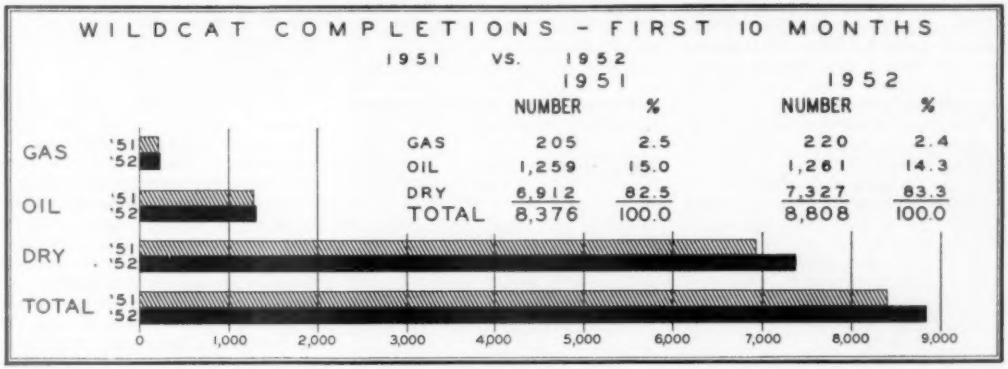
Thompson said, in his opinion, stocks are not adequate. Addressing Dietler, he said, "Our concern is to prevent a shortage of heating oil. You wouldn't like to explain to a congressional committee if we got short of heating oil, would you?"

Two companies, Sun Oil Co. and Sinclair Oil & Gas Co., saw eye to eye with the commission, recommending a 23-19 producing-day formula.

Others, though not as pessimistic as Stanolind, favored cutting production more. Magnolia Petroleum Co. suggested 22-19; Humble Oil & Refining Co. and Cities Service Oil Co., 22-18; Shell Oil Co., 21-19; and Gulf Oil Corp., 21-18.

ALLOWABLES BY DISTRICTS

	Bbl. daily
District 1	43,035
District 2	179,560
District 3	526,476
District 4	285,706
District 5	56,450
District 6 (outside East Texas)	139,018
East Texas field	265,442
District 7-B	142,154
District 7-C	210,063
District 8	1,102,712
District 9	256,815
District 10	98,339
Total	3,305,770



Wildcatting at Peak

October completions are at highest point this year, only 73 below all-time record; 1952 total may exceed forecast

John C. McCaslin

WILDCAT completions set a new 1952 record in October as operators finished 1,005 exploratory tests, the greatest number since the all-time high of 1,078 in August 1951.

October wildcat completions were up 103 over September and 139 over October 1951. Of the 1,005 completions, 131 were oil discoveries, 23 found gas, and 851 were dry holes. For the first 10 months of 1952, exploratory wells have accounted for 23 per cent of all completions and 25 per cent of all footage drilled.

Completions and footage by states, together with a comparison of figures for the first 10 months of this year and the same period last year may be found in the accompanying tables.

Since wildcats require no casing unless they are successful there has been proportionately more wildcatting than development drilling since the steel strike. Both exploratory and development programs have suffered from the effects of the strike, but operators have continued their wildcatting at the expense of development programs.

Operators need to average only 630 wildcat completions in November and December to reach the 1952 total of 10,068 forecast by the Journal in the Midyear Number (July 26, page 208).

Wildcat oil discoveries this year are running just two above last year's cumulative figures, while gas discoveries are up only 15 over last year. Operators have drilled 415 more dry holes this year than last.

Texas . . . Exploratory drilling held steady during October in West Texas and Southeast New Mexico and the Texas Panhandle. It increased in North and East Texas, but fell off considerably in West Central Texas. Recap figures on these areas are on a 5-week basis, while the previous month was a 4-week period.

Discoveries in adjacent Lea County, New Mexico, were said to have spurred the deep drilling in Yoakum County in October. By month's end, Amerada Petroleum Corp. gave the county its first Devonian producer at 1 Weems, located 13 miles west of Plains. Twenty-four-hour potential was 1,934 bbl. of oil from the Devonian, alone, although the well had previously flowed about 80 bbl. hourly from the Mississippian. Three other Yoakum County exploratory wells, projected to 12,000 ft. or deeper, were drilling.

Retesting and deeper exploration in and around older producing areas of West Texas is adding to reserves. In Ector County, west of Central Penwell field, Phillips Petroleum Co. opened a new structure, or gave the old pool a major extension at 1-B Millard in Section 24. The well was a dual completion, rating a 452-bbl. potential from the Waddell section (Middle Ordovician) and 1,054 bbl. from the Ellenburger.

Oklahoma . . . Wildcat discoveries in Beaver County, Oklahoma Panhandle, continued to hold the spotlight in northwestern Oklahoma's portion of the Anadarko basin.

Deep Rock Oil Corp. placed 1-A Shadden on the pump for another discovery in this new important area. Greenough pool, opened earlier this year, was assured another producing well, its fourth, moving production a location westward. The new indicated producer is Carter Oil Co.'s 3 Sharp, the 40-acre northwest diagonal spot to the discovery well. J. M. Huber has a new gas-distillate producer at an outpost location about 2½ miles northwest of Greenough pool near Light pool. On initial opening the 1 Sid Sharp flowed 13,900 M.c.f. of gas daily from Morrow sand.

Exploration received another boost by a rank wildcat gas-distillate discovery well being completed by J. Tom Grimmett and associates. The well is their 1 Hennigh, located north of Gate in the extreme northeastern corner of Beaver County. The well is estimated good for 40,000,000 to 45,000,000 cu. ft. of gas and 200 bbl. of distillate per day, based on preliminary production tests.

Elsewhere in the Anadarko basin Sinclair Oil & Gas Co. completed an important gas-distillate discovery, its rank Canadian County wildcat 2 miles southeast of El Reno. It produces from the second Wilcox. The location is on the east side of the basin, more than 20 miles from the nearest production, West Edmond field.

Williston basin . . . Deep Rock Oil Corp. had highly encouraging shows at the Slope County, North Dakota wildcat south of Dickinson, about 140 miles south of the state's current production.

Shows found at this well are the first of this type anywhere in the state outside of the general Nesson anticline area. The rank wildcat is the first to be drilled in this section of North Dakota.

A discovery by C. H. Murphy, Jr., to the northwest of previous produc-

tion in the East Poplar area of Roosevelt County, Montana, greatly broadened the promise of this area, where production was first established about a year ago. A considerable development program has been conducted in the field, and 10 producers have been completed over a 2-mile trend extending northeast and southwest.

Tide Water Associated Oil Co. found encouraging shows of oil in its Wapella wildcat, 40 miles northwest of Virden pool in Saskatchewan. Also in the Canadian portion of the basin Bailey Selburn Oil & Gas, Ltd., had an indicated Mississippian oil discovery at its first driller in Manitoba. The well is 2 miles northwest of Hargrave and 6 miles north of Virden oil pool.

Pascar Oils, Ltd., reported that its Madison discovery well in the Coulter area just 3 miles north of the United States border in Manitoba had been swabbed at the rate of 20 bbl. hourly. The strike was made during the latter part of the month and company officials now have plans for further drilling in that area, which is 9 miles west-northwest of California - Standard's Waskada oil discovery.

Rocky Mountain area . . . What is believed to be Colorado's most prolific oil well and this year's biggest discovery in the region was going on pump at last report.

The well is the M. E. Davis 1 State, a rank wildcat drilled by Hiawatha Oil & Gas Co. on the Coalmont anticline in the North Park basin. During a 10-hour test the well flowed 1,560 bbl. of oil daily in the First Frontier sand.

Four more locations offsetting the discovery have been staked in the Walden-Coalmont area and will be drilled as soon as possible in an effort to determine the size of the new pool.

George Greer, trustee, completed the Tensleep discovery in the Nine Mile area east of Hardin, Big Horn County, Montana, for 150 bbl. of 20.5°-gravity oil daily. The wildcat, the principal development in the Powder River basin for 1952 in Montana, opened Snyder field and is of considerable importance to this area and to the basin, which has not been an important producing province in the Montana portion. Greer is drilling a confirmation well to the discovery and has begun operations at a new wildcat west of the discovery well.

(For a summary of all completions during October, including development wells, see page 182.)

WILDCATS—FIRST 10 MONTHS

	1952		1951	
	Total completions	Cumulative footage (1,000 ft.)	Total completions	Cumulative footage (1,000 ft.)
Kansas	715	2,788	814	2,929
Oklahoma	605	2,814	682	2,852
Texas	4,124	19,733	3,571	17,074
North Central	1,772	5,961	1,514	5,096
West	744	4,392	696	4,434
Panhandle	63	394	26	170
East	230	1,240	212	930
Gulf Coast	599	4,474	543	3,793
Southwest	716	3,272	580	2,651
Louisiana	336	2,920	301	2,362
North	158	948	165	910
South	178	1,972	136	1,452
Mississippi	239	1,117	128	930
Arkansas	82	368	89	370
Nebraska	161	675	97	462
Rocky Mountains	410	2,126	270	1,290
Dakotas	35	224	8	35
New Mexico	132	909	76	437
California	494	2,295	444	1,854
Tri-States	1,143	2,720	1,465	3,191
Others	332	862	431	1,225
Total	8,808	39,551	8,376	35,011

WILDCAT COMPLETIONS—OCTOBER

	Total	Oil	Gas	Dry	Footage
Kansas	52	7	1	44	200,454
Oklahoma	46	5	1	40	210,244
Texas	504	78	13	413	2,309,908
North Central	188	44	0	144	615,576
West	94	15	0	79	562,667
Panhandle	12	0	1	11	64,452
East	33	*3	2	28	157,597
Gulf Coast	71	3	5	63	479,861
Southwest	106	13	5	88	429,755
Louisiana	50	6	2	42	399,084
North	29	3	0	26	190,667
South	21	3	2	16	208,417
Mississippi	15	3	0	12	104,846
Arkansas	10	1	0	9	59,262
Nebraska	19	1	0	18	86,708
Rocky Mountains	66	5	1	60	323,715
Dakotas	6	0	0	6	27,811
New Mexico	14	7	0	7	118,432
California	50	4	1	45	249,909
Tri-States	133	13	1	119	286,784
Others	40	1	3	36	126,268
Total October 1952	1,005	131	23	851	4,503,425
Total September 1952	902	108	28	766	3,975,907
Total October 1951	866	118	16	732	3,662,722
Cumulative 1952	8,808	1,261	220	7,327	39,551,094
Cumulative 1951	8,376	1,259	205	6,912	35,011,400

*Including 1 condensate.

Big Sale Rumored

Southern Production offers $80,000,000 for company

NEW YORK.—Southern Production Co., Inc., has made an offer to buy the assets of Texas Pacific Coal & Oil Co. for approximately $80,000,000.

Southern Production's offer is equal to about $45 a share for Texas Pacific Coal & Oil stock in complete liquidation. Texas Pacific Coal & Oil has about 1,700,000 shares outstanding. A Southern Production announcement that it had made the offer threw the stock market in New York into confusion, and trading in Texas Pacific Coal & Oil was held up while further information was sought.

In answer to a wire from the New York Stock Exchange, H. B. Fuqua, Texas Pacific Coal & Oil chairman, said:

"Southern Production Co.'s announcement was made without authorization of the Texas Pacific Coal & Oil Co. Texas Pacific Coal & Oil has not received details of the offer which Southern Production announces it is submitting. If received, it will receive usual study and consideration. However, it is unlikely that time will permit any decision in the matter at the next meeting of the board."

Southern's statement . . . The announcement by Southern Production said:

"The offer is subject to such usual conditions as approval of titles, audit of unexamined tax returns, and pub-

lished financial statements of the company, prior approval of the transaction by the Bureau of Internal Revenue and confirmation of reserves.

"The offer conprehends continuing the headquarters of the company in Fort Worth, Tex., and includes assurances to the officers and employes of the company as to continuity of employment.

"Formal action by the board of directors of Texas Pacific is expected to be taken at the regular monthly meeting scheduled to be held November 26.

"Acquisition of assets of Texas Pacific Coal & Oil would give Southern Production Co., Inc., an additional 75,000,000 bbl. of oil and 435,000,000,000 cu. ft. of gas to add to the 50,000,000 bbl. of oil and 1,300,000,000,000 cu. ft. of gas which Southern Production now owns.

"Since Texas Pacific is a Texas corporation, approval of 80 per cent of the outstanding stock is necessary for liquidation of the company as proposed in the Southern Production offer."

What is involved . . . Texas Pacific Coal & Oil owns real estate covering 30,605 acres (fee simple); oil and gas leases and options covering 940,071 acres in Texas, Oklahoma, New Mexico, Kansas, Louisiana, Wyoming, Mississippi, North and South Dakota, Colorado, Alabama, Arkansas, and Montana; a gasoline plant about 4 miles northwest of Caddo, Tex., and an interest (8.225 per cent) in a gasoline plant in Fullerton field, Texas. The company's net interest in oil production in 1951 was 6,844,618 bbl.

Southern Production is headquartered at Shreveport. At the end of last year it held rights of 685,188 acres of proved and undeveloped oil and gas lands in 13 states and in Canada, and in addition held royalty rights on another 37,000 acres. The company's net crude oil production for 1951 was about 3,164,000 bbl.

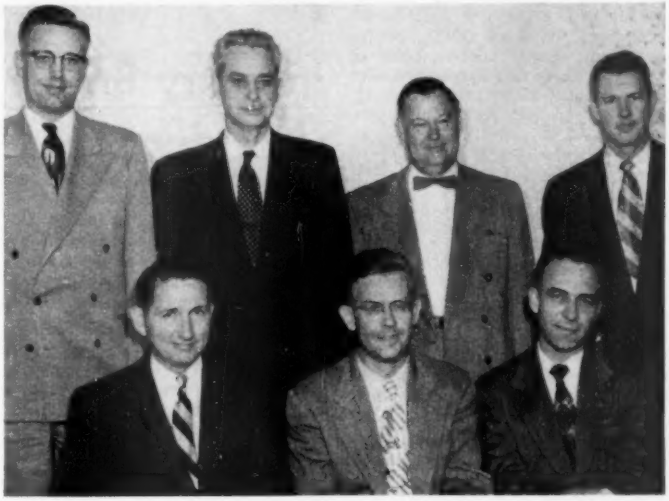
Commission Authority Limited

LITTLE ROCK, Ark.—The Arkansas Supreme Court has ruled that the Arkansas Oil and Gas Commission does not have exclusive jurisdiction over oil and gas production in this state. The commission was not a party to the suit. The court declared the legislature, in setting up the agency, did not intend to grant exclusive jurisdiction to it in oil and gas matters.

The Supreme Court sustained a decision of Union Chancery Court which had enjoined C. A. Lee and Spartan Drilling Co. from permitting salt water to escape from their oil and gas wells into disposal pits in the vicinity of Caney and White creeks.

The petition for the injunction had been filed by Leonard Bull and 12 other property holders who charged that salt water seepage had caused breeding of mosquitoes.

Lee and Spartan, in defending their position, declared that the Oil and Gas Commission had jurisdiction in the matter. However, the higher court ruled the commission had not adopted any regulations governing the matter in question, and moreover that its jurisdiction was not exclusive.



GEOPHYSICAL SOCIETIES' OFFICERS at the sixth annual midwestern meeting of the Society of Exploration Geophysicists held in Fort Worth, November 13-14. Left to right are Bryan A. Duby, Carter Oil Co., secretary-treasurer of the Ark-La-Tex Geophysical Society; Richard Brewer, Atlantic Refining Co., Shreveport, general chairman of the meeting; J. P. Woods, Atlantic, president of Dallas Geophysical Society; Lester H. Johnson, Honolulu Oil Corp., president of Permian Basin Geophysical Society; John H. Wilson, consultant, president of Fort Worth Geophysical Society; Fred G. Knight, Ohio Oil Co., president of Ark-La-Tex Geophysical Society; and Paul L. Lyons, Anchor Petroleum Co., president of Tulsa Geophysical Society.

Manpower Problem

There's a shortage of geophysicists, S.E.G. told; selling job with public required to provide enough new recruits

Philip C. Ingalls

FORT WORTH.—Geophysicists have a responsibility to do all they can to build up their profession's manpower. They all have a part to play in the public-relations campaign to reach and influence the public which is their source of manpower.

This was the message that Curtis H. Johnson, president of the Society of Exploration Geophysicists, gave to the 900 geophysicists at the sixth annual midwestern meeting of the S.E.G. held here November 13-14.

Johnson said that the unprecedented increase and diversification in the use of geophysical exploration has thrown a heavy load on exploration geophysicists to insure a steady supply of raw materials to the world economy. But, he added, despite increased demands for old materials and for such new materials as radioactive minerals the geophysical profession is having difficulty finding a substantial number of new recruits to even balance deaths and retirements.

Recognizing the fact that other engineering professions are as short of manpower as the geophysical profession, Johnson said the best source of manpower for exploration geophysics is the graduate geophysicists and geophysical engineers.

He asked that all geophysicists get busy and tell their story so that university students, prospective university students, and their advisors know the attractiveness of the geophysical profession as a career.

Award winner . . . William W. Butler,

geophysical supervisor of Tide Water Associated Oil Co., Houston, was awarded a life membership for submitting the winning design in a contest to obtain an official crest for the S.E.G.

Butler's design was chosen by a committee on honors and awards from 55 entries. In describing the symbolism of the design, Butler said that although 3,500 exploration geophysicists throughout the world belong to the society the largest concentrations of the membership are in the Western Hemisphere.

The globe map is used to signify that geophysics is the "science of the earth, and the Mariner's compass denotes the fact that the science of geophysics is used to explore the earth and its crust in search of mineral wealth."

Compact to Meet

Gas-storage session will highlight winter session

OKLAHOMA CITY.—Problems of conservation of natural gas will dominate the discussions of the winter meeting of the Interstate Oil Compact Commission in Wichita December 5-6.

At the committee sessions on Friday the engineering committee will discuss underground storage of gas, particularly "field-end storage"; the research and coordinating committee will consider a proposal to cooperate with the Interior Department in compiling information on underground storage of gas and liquid petroleum products; and the regulatory practices committee will make a report on deliverability tests, gas-oil ratios, pressure bases, and related problems of gas production.

Dr. John C. Calhoun, Jr., professor of petroleum engineering at Pennsylvania State College, will address the secondary-recovery committee on gas injection prior to water flooding. This paper is being made available through the courtesy of South Penn Oil Co. and is said to contain previously unpublished information on water-flooding operations in Bradford field.

The "cartel report" of the Federal Trade Commission, which contains language implying that state conservation regulation is used by oil companies in restricting supplies and maintaining prices, is scheduled for discussion before the legal committee. The committee on public lands will present a compilation of state regulations dealing with oil and gas leasing on public lands.

Three prominent addresses will be presented at the general session Saturday in addition to regular business. Commissioner Harrington Wimberly of the Federal Power Commission will speak on "What Price Gas Conservation?". C. H. Hinton of Panhandle Eastern Pipe Line Co. will discuss Hugoton gas field. George Brown, of Brown & Root, Inc., Houston, and a member of the so-called Paley commission, will speak on the report on future mineral resources recently made for the federal Government by that commission.

Industry Briefs

CODY, Wyo.—Husky Oil Co. has begun testing its producing department radio network for which it has just received a Federal Communications Commission permit. The system includes a base control station at Husky, fixed stations at Little Sand Draw and Pitchfork fields, and mobile units in cars of production department supervisors and in two emergency units.

LONG BEACH.—The city council's charter-revision committee is scheduled to meet December 17 to discuss a plan for creating a department of oil properties. The department would direct operations of all city petroleum activities. It would be headed by a petroleum engineer operating under the city manager, according to a proposal submitted by a member of the city council.

NEW YORK.—Sinclair Oil Corp.'s new tanker, P. C. Spencer, largest in the company's fleet, was launched recently at Sparrows Point, Md., by Bethlehem Steel Corp.'s shipyard. The 25,000-ton vessel was named for Sinclair's president. Its capacity is about 175,000 bbl. of crude oil. Immediately after the launching, the keel was laid for a second tanker of the same size for Sinclair, to be named for M. L. Gosney, Sinclair's executive vice president.

CLARKSON, Ont.—The largest cargo of crude oil yet to pass the Welland Ship Canal between Lakes Erie and Ontario arrived here recently aboard the SS. B.A. Peerless. The Peerless, owned by British American Oil Co., Ltd., carried 110,000 bbl. of Alberta crude from Superior, Wis., to Clarkson on its maiden voyage.

PAULSBORO, N. J.—A fire in a tank containing 2,000,000 gal. of fuel oil was snuffed out here last week in less than 2 minutes by the new air-injection method. The fire, believed the largest ever ignited for test purposes, was set before 1,000 persons attending a safety demonstration at the Socony-Vacuum Oil Co. refinery. The new extinguishing method, developed by the company, involves injection of air into the lower areas of the tank, thus bringing the cooler product to the top and cutting down the vapors on which the flames feed.

Research Center Nearing Completion

One of the oil industry's largest exploration and production research centers is that of Stanolind Oil & Gas Co. now under construction in Tulsa. Sixty per cent complete at present, the center is scheduled to be completed next spring. Located on an 80-acre site, the center will include four buildings. The main building, shown here, is three stories high and will house both offices and laboratories. Other buildings will be a heavy-experiments laboratory, a pilot-plant building, and a service and maintenance building. The center will contain 150,000 sq. ft. of floor space and will house between 400 and 500 Stanolind employes.

The New Congress

Chairmanship of House and Senate committees important to oil will go generally to men more sympathetic to industry

Bertram F. Linz

WASHINGTON.—New men and new legislative policies will come to the fore when the Republicans take over Congress in January.

For the most part, the men who will take over the important Senate and House committees are more sympathetic to business and industry and less concerned with putting them in a straitjacket than many in the present administration.

The assignment of committee chairmanships is based on seniority. Thus the men who have been the ranking minority members on the committees will become the chairmen. For many of them it is a second turn in the driver's seat which they occupied in the last Republican Congress. This time they have hopes of a longer tenure.

The men who will shape the legislative policies for the next 2 years represent all degrees of Republicanism from isolationist to internationalist. Some of them in the past have worked for policies which will not be in line with those of the Eisenhower administration. But for the most part, they are expected to cooperate with the new President, fully aware that normally the midterm elections whittle down the majority of the party in power.

Committee lineups . . . Barring changes which may occur in the next few weeks, here is the probable lineup of committees important to the oil and gas industries:

In the Senate, chairmanship of the Appropriations Committee will pass from defeated Sen. Kenneth McKellar of Tennessee to Sen. Styles Bridges of New Hampshire, oldest of all Republicans in length of service and tied with three Democrats in tenth place in seniority in the Senate, he is a strong advocate of economy in government. In the event Bridges is elected president pro tem of the Senate, the post would fall to Sen. Homer Ferguson of Michigan.

Banking and Currency.—Homer E. Capehart of Indiana will succeed Burnett R. Maybank of South Carolina. Capehart is opposed to the emergency controls, which will come up for renewal next year before this committee, and was author of the Capehart amendment to the Defense Production Act which the Truman administration fought bitterly.

Finance.—Eugene D. Millikin of Colorado, who will succeed the very able Walter F. George of Georgia, has fought for stronger congressional control of the Reciprocal Trade Act and is an advocate of tax reduction. A conservative all along the line, he has had little patience with some of the Truman "betterment" programs.

Foreign Relations.—Alexander Wiley of Wisconsin will move into the seat of retired Tom Connally of Texas. He will support Eisenhower's foreign-aid programs and has been an advocate of bipartisan foreign policy.

Interior and Insular Affairs.—This very important committee, which handles tidelands legislation, national fuel policy, public lands, and other subjects directly and vitally affecting the oil industry, will pass from defeated Joseph C. O'Mahoney of Wyoming to Hugh Butler of Nebraska, who headed it in the Eightieth Congress. Butler is a nationalist and conservative.

Interstate and Foreign Commerce.—Charles W. Tobey of New Hampshire, one of the Republican "liberals" and a crusader against monopoly but not antagonistic to the oil industry since his experience with it in working out ways to avert shortages in New England in 1947-48, will take over from Edwin C. Johnson of Colorado.

Judiciary.—William Langer of North Dakota will succeed Pat McCarran of Nevada. He has not always agreed with his Republican colleagues but is expected to stay pretty well in line with the new administration.

In the House, the blustery Rep. John Taber of New York will take the chairmanship of the appropriations committee from the smoother but equally domineering Clarence Cannon of Missouri. Taber, who will be starting in on his thirtieth year of House service, headed the committee in the Eightieth Congress and did a good job in cutting the budget on the basis of expert analysis of the needs of the agencies.

Banking and Currency.—Jesse Wolcott of Michigan will succeed Brent Spence of Kentucky. He was chairman in the Eightieth Congress. A leading economist in the House, he is opposed to the emergency controls over which his committee has jurisdiction.

Foreign Affairs.—Robert B. Chiperfield of Illinois, vigorous opponent of the Truman foreign-aid programs, will succeed James P. Richards of South Carolina.

Interstate and Foreign Commerce.—This committee, which handles oil legislation and since 1934 has been making periodic surveys of the world-oil situation, will pass from the control of crochety Robert Crosser of Ohio to Charles A. Wolverton of New Jersey, who has been a member of the committee since 1927 and headed it in the Eightieth Congress.

Wolverton probably knows as much about oil as any man in Congress and is not unfriendly to the industry. This committee has always been pretty well agreed on oil matters, on which it did little during Crosser's chairmanship. It will probably make another review next year.

Judiciary. — Chauncey W. Reed of Illinois, far from conservative, will succeed Emanuel Celler of New York who currently is investigating the activities of American oil companies in Venezuela.

Ways and Means.—Daniel A. Reed of New York will succeed Robert L. Doughton of North Carolina. He has been a member of the committee since 1919, but this will be the first time he had headed it. He is an advocate of tax reduction and has worked consistently against all efforts of the Truman administration to repeal the percentage-depletion allowance.

On the special committees, Sen. Charles W. Tobey is ranking Republican member of the Senate Small Business committee. However, since he is expected to head the Interstate Commerce Committee, Leverett Saltonstall of Massachusetts stands to get the chairmanship. In the event Saltonstall is elected floor leader, a post for which he has been discussed, Edward J. Thye of Minnesota would be in line. This is the committee which, under the chairmanship of the Democratic vice presidential candidate John J. Sparkman of Alabama, forced the release of the long-suppressed Federal Trade Commission "international oil cartel" study.

The House Small Business committee will pass from the control of Wright Patman of Texas, coauthor of the Robinson-Patman Act. Charles A. Halleck of Indiana is ranking minority member but may become majority leader, in which event William S. Hill of Colorado would be in line.

Paley Report Studied

NSRB recommendations for action on long-range materials problems expected to go to the President within 2 weeks

WASHINGTON. — Recommendations for making effective the findings of the President's Materials Policy (Paley) Commission will be submitted to President Truman by the National Security Resources Board within the next 2 weeks.

The NSRB report will contain 78 specific recommendations, but not all of them will be new. Many will involve activities and policies already in effect.

The Paley commission submitted a five-volume report on the long-range materials problem last spring *(The Oil and Gas Journal, June 30, page 41)*. Subsequently, the President instructed the NSRB to have an interagency study made of the report and recommend steps to implement it.

In carrying out the President's instructions the NSRB sent sections of the report to the agencies interested in the subjects covered, and asked for their suggestions. The oil chapter went to the Interior Department, and the recommendations which will go to the President are expected to be in line with those made by the commission itself, although there may be some difference in the department's views on creating a synthetic-liquid-fuels industry.

Oil recommendation . . . The Paley report, looking ahead 25 years, laid down the problems that must be solved if the nation is not to be deficient in many vital materials by 1975. Those problems relating to oil, it held, could best be solved by private business supported, but not interfered with, by the government.

The report recommended retention of the percentage-depletion allowance, development of tidelands resources to provide an underground stockpile of semiproved deposits which could be drilled up with maximum speed and minimum expenditure of materials and manpower in the event of an emergency, and development of synthetic fuels as major steps for the country's security and well-being.

Its recommendation for retention of percentage depletion is seen as effectively halting all attempts, by administrations of any political faith, to eliminate this incentive to exploration. The commission saw depletion as an important incentive to discovery and development of the mineral as well as oil resources which the nation must find to avoid deterioration to a have-not status over the next quarter century.

A final recommendation by the commission was that the NSRB, with the aid of the Interior Department, should undertake a continuing study of the economic aspects of producing synthetic fuels in relation to security needs and the outlook for future petroleum supplies. The board is expected to accept this assignment, which is in line with the purposes for which it was created.

Action in March . . . The next step in making the Paley recommendations effective will probably come in March, when Resources for the Future, Inc., will meet in Washington in cooperation with the White House. The organization, nonprofit in nature, was set up by a committee of citizens on the invitation of the Ford Foundation, and is directed by a board of prominent industrialists, bankers, and educators.

The March meeting will attempt to revive the interest in our natural resources which was developed in the conservation conference of 1908, the first venture into the field of planning for the future.

It has been pointed out that had the Paley report been issued and acted upon in 1925 billions of dollars would have been cut from the cost of the last war, and the country today would be in much better position in regard to vital materials.

Tidelands Hearing Set

WASHINGTON.—The special House interior subcommittee studying the question of seaward boundaries of the coastal states will open a 2-day hearing in New Orleans December 10.

The hearings, which started in Los Angeles in October, will wind up with a 3-day session in Washington beginning December 16, and the subcommittee will prepare a report to be submitted to the House when Congress convenes in January.

The subcommittee is headed by Rep. Clair Engle of California, who will return from Korea for the hearings.

The study was authorized by the House last session after President Truman vetoed the tidelands quitclaim bill and is designed to define the seaward boundaries of the states, beyond which the federal Government's paramount rights, conferred upon it by the Supreme Court in the California, Texas, and Louisiana cases, would apply.

Gas Crisis Near

FPC calls Northern Natural to account for its defiance of a commission order forbidding it to dispose of its reserves

WASHINGTON. — A showdown on the authority of the Federal Power Commission to control production of natural gas was in prospect this week as the commission hailed Northern Natural Gas Co. before it on a charge of violating its orders regarding Northern's reserves.

Northern defied FPC by turning over all of its producing wells, leases, and wildcat acreage to a new subsidiary, Northern Natural Gas Producing Co., as the outcome of a long controversy with the commission (see *"Northern Natural's Growing Pains," The Oil and Gas Journal, November 3, page 69*).

The commission had twice stipulated that Northern must agree to commit its owned gas reserves to its present service as a condition for a certificate to expand its system between Hugoton field of Kansas and consuming cities in the Omaha-Minneapolis region.

The first stipulation was made last June in connection with a certificate authorizing Northern to expand its system to 825,000,000 cu. ft. per day. Northern refused to accept this condition and asked a rehearing. On October 29, FPC modified the stipulation in some respects but retained the basic prohibition against alienating the reserves.

Northern announced that it would accept this condition under protest and begin construction work immediately, but a few days later it turned over all its reserves and its entire exploration and production activities to the new subsidiary. The gas is still committed to the pipe line through sales contracts made with the new company.

Northern's view point . . . Northern's position is that FPC has no jurisdiction over producing and gathering activities and hence has no authority to control its reserves nor to regulate the operations of the new subsidiary. It stated that creation of a separate producing company would eliminate much of the confusion concerning Northern's status before the commission.

The basis of this controversy is the

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effort of FPC to set maximum field prices for gas produced by pipe-line companies which, in Northern's case, were set far below the prevailing field price in Hugoton field and below the minimum specified by the Kansas Corporation Commission.

If Northern is successful in disposing of its reserves and producing activities to a separate company not subject to FPC jurisdiction, the producing company can sell gas to the pipe-line company at prevailing field rates.

The outcome of this case will have a decided bearing on the producing activities of many other gas-transmission companies and very likely will reopen the fight in Congress to amend the Natural Gas Act by limiting FPC jurisdiction over gas production and field prices.

PAD After More Steel

WASHINGTON.—The Petroleum Administration for Defense is seeking a 50 per cent increase in the amount of steel to be allocated for the oil and gas industries for the second quarter of 1953.

Estimates drawn up for submission to the Defense Production Administration showed that industry requirements for the second quarter will be 2,153,000 tons, of which 237,000 tons will be heavy plate and 81,000 tons structural steel. The allocation for the first quarter of next year is 1,434,850 tons.

Texaco Indicted

Violation of controls act alleged in obtaining pipe

WASHINGTON.—The first criminal prosecution arising out of violation of Defense Production Act controls administered by the Petroleum Administration for Defense was announced last week by the Department of Justice.

The department disclosed that The Texas Co., the Superior Iron Works & Supply Co., and eight individuals had been indicted by a federal grand jury at Shreveport, La., for alleged illegal diversion of oil-country tubular goods.

The indictment, in one count, charged Charles Jackson and Irving Singer, both of New York, with unlawful use of a defense-order priority rating to procure tubular goods from the emergency stocks set up for wildcat operations. In a second count, it charges the two men, the two companies, and George S. Mahler, James E. Zoes, and Norman Mintzer, all of New York; Clayton B. Watson, treasurer, and Lorenz A. Ver Bryck, New York representatives of Superior, and William G. Taylor, assistant manager of The Texas Co. purchasing division, with conspiring to violate the Defense Production Act and regulations setting up the priority-allocation system for distribution of tubular goods.

The maximum penalties are $10,000 fine, or one year's imprisonment, or both, on each count.

The conspiracy charge . . . The department said that "gray market" profits of $100,000 were realized by the alleged conspiracy, which the Government charged was conducted as follows:

Jackson filed a form in December 1951 seeking priorities assistance to obtain 247 tons of tubular goods for use in drilling an oil well in Brazoria County, Texas. The allocation subsequently was approved by PAD. Jackson is alleged at the time of application to have arranged already to sell the pipe through Zoes and Superior Iron Works to The Texas Co. The Govern-

Heavy, sand-cut oil . . .

Leaves a residue which is mixed with dirt on lease roads . . .

To provide highways like this.

Shell Turns Waste Oil Sand Into Asset

LOS ANGELES.—What used to be a liability in its San Joaquin division has become a valuable product for Shell Oil Co.

Wells on the company's Weir lease produce a heavy crude oil which is cut as much as 50 per cent with fine sand. To reclaim the oil, the crude is run into sumps, heated by coils, where the oil is separated and skimmed off. After a short period of operation, the company used to be faced with the problem of disposing of the remaining oil-soaked sand or digging a new sump.

The company has solved the problem by using the sand for surfacing its lease roads on which traffic was too light to justify paving with asphalt. The roads are graded and the oil sand mixed with the dirt. The mixture is then rolled to form an all-weather surface which will handle both light traffic and heavy equipment.

ment also contends that about 568 tons of pipe was diverted from the drilling of wildcat wells by independent drillers to The Texas Co., which already had been authorized a regular quarterly allotment of pipe. Texas is said to have paid about double the OPS ceiling price for the pipe and the extra freight charges involved.

The alleged violations were uncovered by PAD, which issued directives freezing in the hands of the operators all tubular goods which had not already been used in drilling, in order to prevent further disposition of the materials pending investigation of the case, the department said.

Texaco Denies Charge

NEW YORK.—The Texas Co. last week denied having knowingly violated any law or regulation in buying steel pipe.

J. Sayles Leach, Texaco president, said: "The Texas Co.'s policy is to live up to the spirit as well as the letter of all laws and regulations governing the company's operation. The particular pipe in question is less than one-half of one per cent of our total annual requirements and from our investigation we believe that our employes acted in complete good faith in the matter.

Oil's Attackers Meet

Justice Department, FTC, Senate Small Business committee huddle to map future moves in "oil cartel" investigation

WASHINGTON. — Department of Justice and Federal Trade Commission officials met with the Senate Small Business committee November 18 to discuss the status of the Government's "oil-cartel" case.

The closed-door meeting was called by Chairman John J. Sparkman of Alabama with a view to determining what part the committee should play in further investigation of the foreign activities of American oil companies.

Sparkman reportedly is annoyed at charges the FTC cartel study was released last August to strengthen his position as Democratic candidate for the vice-presidency and has in mind the calling of further hearings before the end of the year. Before making a decision, however, he reputedly wanted to get the views of the Department of Justice as to what effect further committee investigation might have on the success of the Government's effort to indict the companies allegedly participating in an international oil cartel.

Other developments . . . Reasons for the British Government's refusal to allow Anglo-Iranian Oil Co., Ltd., to produce the documents demanded by the Washington federal District Court handling the cartel case were explained last week in the House of Commons in London.

Geoffrey Lloyd, minister of fuel and power, told the House of Commons that Britain considers it "contrary to international comity that British companies should be required to answer subpoenas couched in such wide terms or produce documents which are not only not in the United States but which do not even relate to business in that country."

The minister said disclosure of some of the company's records "might well prejudice or endanger the economic, strategic, and political interests of both Britain and the Western allies." He said security considerations were not only factors in the government's decision but declined to state what the other factors were.

Consequently, Anglo-Iranian has been ordered to withhold documents from the investigation which do not relate to business in the United States. The British Government holds a majority interest in Anglo-Iranian but its decision was a political one. The other British company named in the subpoena was Royal Dutch-Shell, which operates in the United States through Shell Oil Co.

Originally, the Justice Department obtained a subpoena for its grand jury investigation which required the companies to turn over virtually all records relating to the international oil business during the last quarter of a century. Questions were raised from the beginning concerning the court's jurisdiction over purely foreign activities — especially those conducted by completely foreign companies such as Anglo-Iranian which have no operations whatever in the United States.

Foreign opposition . . . The United States companies themselves have protested to the court that many of the documents are outside the United States and that consent of the foreign governments concerned is necessary for their submission. The Indian Government has told Standard-Vacuum Oil Co. that records relating to sale of oil in India, and especially to its military forces, cannot be disclosed without authorization from that government.

The London Times, in an editorial feature on the case, recalled the British injunction in October of this year which restrained Imperial Chemical Industries, Ltd., from breaking a contract with British Nylon Spinners in obedience to an order of a New York court. At the time misgivings were expressed as to "whether the (American) order, in the form which it takes, does not assert an extraterritorial jurisdiction which the courts of this country (Britain) cannot recognize."

"The courts of any nation ordinarily take what care they can not to come into conflict with the jurisdiction of another sovereign state," the Times said. "Governments also strive toward the same end. But the attempt has to be reciprocal if it is to succeed. When it comes to an issue, governments have a duty to protect their subjects against extraterritorial jurisdiction."

Price Appeal

I.P.A.A. goes to Chapman in struggle for decontrol

WASHINGTON.—Decontrol of crude prices is the only incentive the oil industry needs to carry out any expansion program set by the Government, according to the Independent Petroleum Association of America.

Appealing to Interior Secretary Oscar L. Chapman to do something about the refusal of Price Director Tighe E. Woods to raise or eliminate ceilings on crude, Russell B. Brown, general counself for the I.P.A.A., declared that a proper price would make it unnecessary to search for the new "technique," "inducement," or "something" the secretary said in his address to the American Petroleum Institute would have to be found.

Brown charged that, while Chapman has worked vigorously and effectively to see that the producers have secured adequate supplies of steel and has recognized the importance of economic incentives for the other branches of the industry, he has done little to relieve the situation of the domestic producers.

Urging Chapman to seek the removal of price ceilings, Brown asserted that "price cannot perform its normal and necessary function under present controls," but the producers, given sufficient materials and freedom from controls which are disruptive of the normal economic incentives, "can and will accomplish expansion of productive capacity sufficient to meet emergency needs."

Secrecy criticized . . . Brown also criticized the failure of the Government

WATCHING WASHINGTON

Bertram F. Linz

Just in Case . . .

It is unthinkable that any member of the oil and gas industry would pay over-ceiling prices for materials, of course, but just in case he should he can now include the excess as part of the cost of goods sold in computing his income tax.

To make this possible the Internal Revenue Bureau, in conformity with decisions of the Tax Court, has reversed its original decision that above-ceiling payments would not be allowed in computing costs for federal tax purposes.

The bureau's original position was designed to support the efforts of the Office of Price Stabilization to enforce conformity with its ceiling regulations. By refusing to permit the over-ceiling prices to be included in the cost of goods sold, the bureau in effect imposed a premium on top of that which the taxpayer already had paid the seller.

If DPA Expires . . .

The National Security Resources Board may inherit the work now being done by a number of emergency defense agencies if the Defense Production Act is permitted to expire next year.

Discussion of the future of the defense program so far has centered almost exclusively on the highly controversial price, wage, rent, and materials controls, and there has been little talk about the other sections of the act which make provision for industrial expansion, authorize government purchase of needed materials, industry participation in planning, joint industry action to meet specific situations, etc., which are the real core of the mobilization effort.

Mobilization planning now runs into 1956—and may have to be extended still further, and there is no apparent intention on the part of either Republicans or Democrats to abandon our industrial build-up. But an economy-minded Congress is likely to take a dim view of continuing a big and far-flung organization unless emergency conditions develop.

The NSRB originally handled the expansion program and issued certificates for accelerated amortization before the Defense Production Administration was organized, and some consideration now is being given to returning that and other functions if the emergency agencies are eliminated. The job would be in line with the purpose in setting up the board of centralizing defense planning.

As now discussed, the board might take over the operations of the Office of Defense Mobilization, National Production Administration and the National Production Authority, the last for continuance of priorities on certain items such as oil-country tubular goods and various alloys which will continue to be short for some time to come, and leave untouched the agencies dealing with specific fields of industry, such as the Petroleum Administration for Defense, whose activities go beyond the mere control of materials.

Fewer Investigations?

Observers in Washington expect that the congressional fervor for monopoly investigations of the past years will cool off rapidly after January.

They believe the new Republican administration will take the position that constant investigation serves only to harass industry without accomplishing anything that couldn't be accomplished as well or better merely by enforcing laws already on the books.

There have been a number of monopoly investigations and congressional reports but they have not always resulted in Department of Justice action. In fact, one charge leveled against the Truman administration is that it has been highly selective in its antitrust prosecutions, and just recently questions were raised about the failure to prosecute an alleged tight monopoly in the liquor industry.

The new administration, incidentally, will find the department one of the most fruitful plum trees for political appointments. Whereas civil service protection in most departments runs up to within two or three layers of top-level officials, in the Department of Justice it stops pretty far down the line. There will be several hundred jobs throughout the country to be filled with Eisenhower men.

to announce the expansion required of the industry under the defense program.

"If this information is now classified as secret," he declared, "this secrecy should be removed so that the industry may be informed as to what you expect of it. To say that we should go on and on without indicating a goal creates confusion as to the objective."

The way to attain the expansion goal, Brown explained, is through proper price and not by the new and unspecified incentives of which Chapman spoke and which "may disturb rather than encourage the industry."

"The industry has demonstrated its ability to expand in response to free economic forces," Brown said. "Market outlet, price, and a proper tax base are proven and effective incentives. They should and must be permitted to operate so as to make a maximum contribution to the building of the added reserve capacity you recognize as necessary for security. They cannot be fully effective if increased imports limit the market outlet at the same time that controls deny a proper price. We, therefore, believe that the first step in the job ahead is the prompt removal of restrictive price controls."

Attention on Oil

New Congress to examine restrictions on industry

WASHINGTON.—The new Republican-controlled Congress will get into investigation of the oil industry at an early date.

Rep. Charles A. Wolverton of New Jersey, who is expected to head the House Interstate Commerce committee, is laying plans for a series of hearings directed primarily at acquainting new members of the committee with the problems they will have to consider.

Oil and gas will rank high on the list of subjects to be covered, and in a series of hearings this winter the committee will call in representatives of the government regulatory bodies to "justify the restrictions" imposed on industry during the past 20 years of Democratic administration.

Controls fence . . . While conceding that the outgoing regime has accomplished many advances in the field of industry and business, Wolverton charged they also have "hedged industry and business with so many facets of federal control they have emasculated much of the traditional spirit of free enterprise and individual initiative that has made America great."

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cials is expected to be followed by another in the committee's series of inquiries into the oil situation at home and abroad which was started in 1934. Here, industry spokesmen will be given an opportunity by Wolverton during the Republican Eightieth Congress, and present the problems it now faces.

Plants Scattered

Petrochem dispersion for defense praised by NSRB

WASHINGTON. — The rapidly expanding petrochemical industry is providing a good example of effective dispersion of defense-important industry as a safeguard against enemy air attack.

While petrochemical plants are being built rapidly all over the United States, there is no single "center" of production that would afford an attractive target, according to Jack Gorrie, chairman of the National Security Resources Board.

Gorrie reported that a survey of plants costing $1,000,000 and more for which rapid tax amortization certificates were granted during the first 18 months of the Korean war shows that more than four-fifths of the facilities are located outside the central cities of industrial metropolitan areas.

In recent months, the Defense Production Administration has required that plants receiving certificates comply with national dispersion standards of 10 miles or more away from potential target areas, unless over-riding economic reasons justify an exception.

Soviet contrast . . . Gorrie contrasted the voluntary dispersion program, under which management remains free to select sites which meet its economic needs and still are less vulnerable to attack, with the Soviet policy of building great new production centers behind the Urals with its concomitant slave labor, location of production facilities thousands of miles from consumers and tremendous transportation problems.

"If war should come to the United States, the principle of limited dispersion within local marketing areas will pay off in fewer transportation problems, in more efficient use of manpower, in proximity of manufactured components to final assembly lines," Gorrie pointed out.

Distillate Exports Double

WASHINGTON.—Exports of major petroleum products increased to an average of 275,600 bbl. daily during the week ended October 24 from 213,100 bbl. a day in the preceding week, according to statistics compiled by the Petroleum Administration for Defense.

This was the highest average attained since the week ended August 1. It was due largely to the approximate doubling of distillate shipments, although both aviation gasoline and residual also showed increases. Exports of motor gasoline and kerosine declined, the former by more than 50 per cent

Details of the movement for the week, compared with the preceding week, for the 4 weeks ended October 24, and with changes from the preceding 4 weeks, are shown in the accompanying table in thousands of barrels daily.

	Week ended		Average
	Oct. 24	Oct. 17	4 weeks
Aviation gasoline	30.5	29.1	31.0
Motor gasoline	22.1	48.0	30.2
Kerosine	8.5	12.0	17.9
Distillate	145.0	79.7	102.7
Residual	69.5	44.3	44.3
Total	275.6	213.1	226.1

Drill-Pipe Deadline Near

WASHINGTON.—Oil and gas operators are being reminded that the deadline for the filing of applications to secure drill pipe during the second quarter of 1953 is December 15.

PAD cautioned also that applications now must be filed on Form PAD-17DP Revised. The unrevised form used previously is no longer acceptable.

PAD Gets Pipe-Line Problem

WASHINGTON.—The Munitions Board has sent a letter to the Petroleum Administration for Defense placing in the hands of the latter agency the determination of the urgency of the proposed West Coast pipe line from Texas to California.

The board's letter followed a conference early last week with officials of the pipe-line company who were seeking to have the defense department classify it as an "emergency" facility and guarantee a throughput of 60,000 bbl. daily.

The company was told the military purchases products only and has no interest in crude, which the line will transport, and that, further, the department could not designate a specific line as essential over possible other facilities.

In its letter, however, the board said a pipe line to the West Coast would be desirable as a means of increasing flexibility of supply and lowering transportation costs, but since PAD is responsible for the furnishing of products needed by the military when and where required, the board looked to it to take such action as might be necessary to assure supplies.

WEST COAST

More Gas Wanted

Survey shows California must hike imports sharply

LOS ANGELES. — Natural-gas imports into California, which have climbed phenomenally during the past 3 years, will have to go much higher to meet demand in coming years.

Public hearings held recently by the California Public Utilities Commission to determine future availability of natural gas in the state disclosed that sales jumped 25 per cent between 1949 and the end of 1951. Local production not only did not keep pace with sales, it fell off during the same period. Imports, meanwhile, shot upward from 94 billion to 243 billion cubic feet.

The soaring demand in the state is attributed partly to the surge in population and partly to the use of more gas per customer.

Reserves up . . . Paradoxically, while production has dropped off, estimated recoverable reserves have increased, the commission discovered. This, however, was considered not due so much to discoveries as to upward revision of reserve figures from new calculations.

Estimates presented during the hearing by the State Division of Oil and Gas show reserves increased about 370 billion cubic feet from January 1, 1951, to January 1, 1952. Total reserves at the latter date were set at 9.5 trillion cubic feet.

While reserves were going up, net production fell off from 577 billion cubic feet in 1949 to 559 billion cubic feet in 1951.

Gas available to California users from all sources increased to 793 billion cubic feet in 1951, compared to 665 billion in 1949.

During 1951, 517 billion cubic feet was sold to customers, 208 billion used by oil companies, 50 billion consumed by gas companies, and 25 billion unaccounted for, all totaling 800 billion cubic feet.

From this figure must be subtracted 3 billion cubic feet stored underground by gas companies and another 4 billion sold by these companies to oil firms.

LATIN AMERICA

Imports for Mexico?

Mexican-American team says that without new discoveries of major importance demand will exceed supply by 1956

FAILING the discovery of new large reserves, Mexico will be forced to import oil to meet her domestic requirements by 1956, it was disclosed last week.

A voluminous report on major long-term trends in the Mexican economy prepared by a Mexican-American working party and released in Washington through the International Bank for Reconstruction and Development, revealed that unless the production of oil and natural gas is greatly increased, Mexico will have a deficit equivalent to 5,000,000 bbl. of oil in 1956.

The report estimated that oil production—78,800,000 bbl. in 1951 and estimated at 79,600,000 bbl. this year—will increase to 86,100,000 bbl. in 1956. Natural-gas production, in oil equivalent, will be 4,400,000 bbl. this year and 13,200,000 bbl. 4 years hence. But consumption, placed at 78,100,000 bbl. this year, will be 104,300,000 bbl. in 1956.

On the basis of past experience and present conditions, the working party calculated that increases in oil production over the next few years will not exceed 2 per cent a year. With natural gas, the combined production will rise at an annual rate of about 4.5 per cent, while consumption is seen as continuing to increase at not less than the 10.1 per cent rate of the years 1946-50.

Old fields depleted . . . Because of the rapid increase in demand, Pemex had been forced to concentrate on projects which yield quick results and, in spite of insufficient funds, has so far been able to keep pace with domestic consumption. The reserves of major oil fields have been greatly depleted and no important increase in output now is to be expected from them.

"Most of the recent efforts to find new oil deposits have been made in extensions of Poza Rica field, where drilling is inexpensive and development costs low," the report stated.

"However, the discoveries in this area are unlikely to yield an increase in production similar to that obtained from Poza Rica in recent years. Important oil discoveries were recently made southeast of the Isthmus of Tehuantepec, but before they can be fully exploited wells must be drilled and transportation must be provided. Similarly, a considerable investment in drilling wells and laying new pipe lines will be necessary to develop the rich gas reserves of the Northeastern field.

"Consequently, unless expenditures for exploratory and developmental drilling rise far above their present level it is unlikely, in the absence of striking new discoveries, that production of petroleum and natural gas will rise by more than 4 or 5 per cent a year in 1952-56 compared with an annual average increase of 11 per cent in 1946-50."

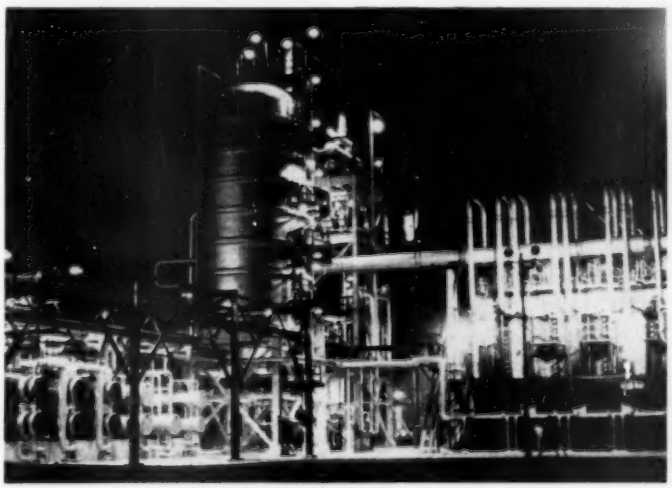
Oil to cost more . . . The experience, organization and financial strength of Petroleos Mexicanos should make future objectives easier to obtain than in the past, the survey indicated, but on the other hand, Poza Rica and the export surplus can not be counted on as in the past to meet the growing needs of the domestic market with low investment outlays.

"Barring the possibility of an exceptionally favorable strike, therefore, future increases in production can be achieved only at higher costs," it was concluded.

Much of the difficulty which Mexico faces is due to the policy of requiring Pemex not only to finance oil investment from its own resources but also to subsidize other government agencies with funds which could be used by it for development purposes, the report pointed out.

It has accordingly been difficult for Pemex to increase refining and transportation capacity and at the same time raise exploratory and development drilling to the required levels. Under these circumstances, the company has directed its activities primarily towards increases in supply to meet rising demand, which explains why, out of 567 wells sunk between 1946 and 1950, 80 per cent were developmental and only 20 per cent exploratory. There is no indication that this disparity has been narrowed and the report pointed out that even foreign contractors who are drilling in Mexico under agreements with Pemex are working mainly in known oil fields.

The working party was unable to obtain detailed data on Pemex's investments during 1951, but available information indicates expenditures did not



New Vacuum Flash Unit in Trinidad

This is the new 25,000-bbl. vacuum flash unit at the Pointe-A-Pierre refinery of Trinidad Leaseholds, Ltd. The recently completed installation charges about 25,000 bbl. of mixed reduced crudes from topping units and produces 15,000 bbl. per day of vacuum gas oil for feed stock to the refinery's new cat cracker. Main equipment items are an equiflux down-draft heater and the vacuum column, itself, which is 21 ft. in diameter lined with stainless steel and fitted with alloy bubble decks.

differ significantly, either in amount or composition, from investments made in 1950.

Published accounts of the 1952 investment program reveal no major deviations from the past. The planned investment this year will amount to 400,000,000 pesos, which in real terms is probably below the 374,000,000 pesos spent in 1950, the report said.

Pemex Optimistic

Officials estimate large production from new field

PETROLEOS Mexicanos officials now estimate that crude production from the new Ezequiel Ordonez field near the Tamiahua lagoon in the State of Veracruz will reach 50,000 bbl. daily next January.

The new field, considered to be the most important Mexican discovery in recent years, *(The Oil and Gas Journal, September 15, page 76)* now has three wells completed. A fourth is being drilled and two others are due to be spudded in the near future. A pipe line connecting the new area with the Poza Rica refinery is under construction.

Pemex officials are highly optimistic, not only concerning Ezequiel Ordonez, but also about another new area, Horcon, which is about 25 miles northeast of Ezequiel Ordonez. One well in Horcon tested about 1,000 bbl. daily. Pemex feels that much of the entire area between San Isidro and the Gulf eventually may be shown productive as an extension of the Golden Lane.

About 8½ miles from Cerro Azul in the State of Veracruz, Pemex recently brought in a producer, 109 Solis, in what was reported to be a new zone at a depth of about 2,440 ft. Initial production was about 600 bbl. daily. Two other wells are planned immediately.

Pemex also has reported that 44 and 65 Reynosa have been completed as gas producers with a total production of 5,000,000 cu. ft. daily. In Presidente Aleman field in Veracruz, the latest completion has a 700-bbl. daily production, while at Cacalilao, Nos. 1,014 and 2,108 each are producing about 200 bbl. daily.

New Field Now Has 3 Wells

Three wells have been completed thus far by Phillips Petroleum Co. in its new Bella Vista field in eastern Venezuela. The discovery was made last June by the company on its Block C acreage near the town of El Socorro in the State of Guarico.

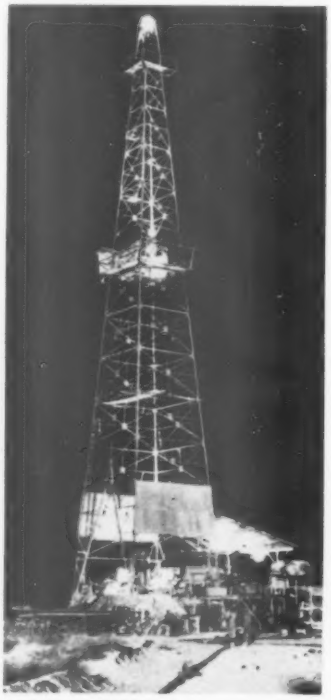
On completion tests, production from the three wells totaled approximately 550 bbl. daily from a depth of 3,000 to 4,600 ft. from a Miocene sand. Gravity of the oil varies from 28° to 42°. A fourth well is now in process of completion, and Phillips is planning to develop the field as rapidly as possible.

Lube Plant Started

Construction has been started on Mexico's first lube-oil plant, located at Salamanca, Guanajuato, northwest of Mexico City.

The plant will supply half of Mexico's lubricating needs, met in the past from the United States. It is due for completion in 1954.

Arthur G. McKee & Co., Cleveland, is building the plant for Petroleos Mexicanos, government oil monopoly.



Gas Discovery in Pakistan

Tests last week were under way to determine the potential of a gas strike by Pakistan Petroleum, Ltd., in Sui, Dera Bugti, Baluchistan, in West Pakistan. The wildcat, drilled by this rig, was spudded on October 10, 1951, and reached a total depth of 10,049 ft. in July this year. Production tests at various levels failed to produce oil. The company, an associate of Burmah Oil Co., Ltd., said another well will be drilled in the area soon. It is understood that discussions are being held between the Pakistan Government and the company regarding use of the gas.

Creole Hikes Production

Creole Petroleum Corp.'s production in September rose more than 35,000 bbl. daily above the depressed level of output in August. Production of the company in September was 722,394 bbl. daily, including 608,511 bbl. daily from Lake Maracaibo, 3,799 bbl. daily from Cumarebo and Mara, and 110,084 bbl. daily from Eastern Venezuela. The company's net production plus purchased royalty amounted to 776,334 bbl. daily.

Creole's refinery runs in September were 55,266 bbl. daily at Caripito and 64,340 bbl. daily at Amuay. The company completed 15 wells, operating an average of 18 rigs. Of the completions, three were exploration wells—two dry holes in Guanoco and in Pedernales and one oil producer in San Joaquin.

MIDDLE EAST

Israeli Oil Rules Awaited

Detailed regulations implementing the new Israeli petroleum law have been drafted and are now awaiting final approval of the Israeli minister of finance.

The regulations deal with, among other subjects, the progress reports which licensees and lessees must submit to the petroleum commissioner, applications for licenses and leases, instructions for lease awards by competitive bids, and the time intervals within which royalties must be paid. The regulations also include provisions dealing with conservation.

The regulations, as well as the law itself, were drafted with the assistance of Max Ball, Washington petroleum consultant. Several companies, including Swiss and Canadian interests but none of the major international oil groups, have indicated interest in taking concessions under the law.

Haifa Plant Agreement Near

A new agreement for the continued operation of the Haifa, Israel, refinery is about to be signed by Anglo-Iranian Oil Co., Ltd., and the Israeli Government.

The 85,000-bbl. refinery, once a major supplier of products to Europe, has been working at only about a fourth of its capacity because of neighboring Iraq's long-standing refusal to permit

the operation of the pipe line connecting the refinery with Kirkuk field in Iraq.

Details of the new operating agreement, including the planned throughput of the refinery, were not disclosed. It was said in Haifa that the refinery, which was exempt from taxation under British control of Palestine, would pay taxes to the Israeli Government, and that the new government-backed distribution company in Israel would market 30 per cent of the refinery's production. It also was reported that sterling-area crude would be used and paid for out of West German sterling balances under the recently signed German-Israeli reparations agreement.

The refinery is operated by Consolidated Refineries, Ltd. (Anglo-Iranian and Shell).

Engineering Center Started

Construction work has begun on a new technical training institute in the Persian Gulf shaikhdom of Kuwait. This institute is due for completion is about two years' time and is designed to become eventually the center of engineering studies in the Middle East.

Instruction will be provided in every branch of engineering technology, with modern dormitory accommodations for 750 students and additional facilities for 250 day students. Contract for building the college, costing nearly £2,000,000 ($5,600,000) has been awarded to the British firm of John Howard & Co.

Kuwait is now the world's fifth-largest oil producing country, and under the agreement reached late last year, a 50 per cent participation accrues to the ruler of the shaikhdom. Other improvement projects are under way, including a hospital and new schools. The long-range plans of the Kuwait shaikh contemplate the establishment of secondary industries in the territory when trained engineers are available.

Aden Refinery Work Started

The British liner Dorsetshire, which is being used as a floating hotel for engineers and construction workers engaged on Anglo-Iranian Oil Co., Ltd., refinery project at Aden, has arrived at the Red Sea port with the initial 150-man force.

The refinery will have a capacity of around 100,000 bbl. daily and will be about 2 years under construction.

Along with the refinery itself, the company also is building a complete town, including dwellings, shops, normal municipal services, and minor industries.

About 5,000,000 cu. ft. of sand will be dredged from the channel to allow its use by 30,000-ton supertankers. The 270-acre refinery site is now a barren sand spit.

Pipe-Line Ceremonies Set

Iraq Petroleum Co., Ltd., has scheduled two ceremonies the latter part of this month to inaugurate officially the new 30 and 32-in. pipe line from Kirkuk field in Iraq to the Eastern Mediterranean.

Ceremonies November 18 at Kirkuk are expected to be attended by King Faisal and the Iraq regent. November 24, another inauguration ceremony will be held at the Mediterranean terminal at Banias, Syria. The Banias dedication is to be attended by the Syrian chief of state and other high government officials.

In September, throughput of the new line reached a new record when 74 tankers loaded crude at the rate of 40,000 long tons daily (about 304,000 bbl. daily) at Banias. The line went into initial operation last spring, but its deliveries have been rapidly stepped up in subsequent months. The increase from July to September was due principally to installation of four 2,000-hp. booster pumps at Station T-2. This increased line pressure in this section from 10 to 700 psi. Similar booster pumps are under consideration for Station T-4. It is estimated this would bring the annual loading figure up to 16,000,000 to 17,000,000 tons a year (333,000 to 354,000 bbl. daily).

AFRICA

Egyptian Problems Studied

The long-standing differences between the Egyptian Government and the oil companies operating in that country have been turned over to a high-level government committee for study.

A Cairo announcement said the committee would look into the agreements with the foreign oil companies. Presumably this includes not only the products-pricing agreements but also the lease terms and other unworkable features of the 1948 Mining Law which have resulted in a complete cessation of all drilling in Egypt.

A spokesman for the Naguib Government said the members of the committee would be government ministers. Earlier, the government announced in Cairo that it was setting up a committee to negotiate with Britain for the purchase by Egypt of the products pipe-line system built by British companies in Egypt.

EUROPE

Capacity Soars

U. K. refinery potential soon to hit 530,000 bbl.

BRITISH refining capacity in the United Kingdom, according to latest estimates, will reach nearly 530,000 bbl. daily early next year.

By conducting a tremendous refinery construction program since the end of the war, Great Britain has become the largest refining country in Europe and is expected to become a net exporter of products.

Actual refining capacity in the United Kingdom the middle of this year was 432,600 bbl. daily (tonnage figures converted to barrels daily on the basis of 1,000,000 tons equals 20,000 bbl. daily). This is slightly above the throughput capacity which was forecast by the Organization for European Economic Cooperation for 1952-53.

Anglo-Iranian . . . Anglo-Iranian Oil Co., Ltd., had a capacity of 134,000 bbl. daily in the United Kingdom the middle of this year. Its total is to rise to 214,000 bbl. daily, or about 40 per cent of the country's total, as a result of initial operation of the new 80,000-bbl. Kent refinery.

Others . . . Shell was shown to have capacity of 170,000 bbl. daily in the United Kingdom; Esso,, 120,000 bbl. daily; and the smaller companies, 8,600 bbl. daily. Besides Anglo-Iranian's increase, Vacuum Oil will bring about 17,000 bbl. daily of new capacity in operation at Coryton early next year.

Beyond this 530,000 bbl. daily total early in 1953, further planned increases provide for an additional 30,600 bbl. daily. This consists of 10,000 bbl. daily by Esso at Fawley, a possible 20,000 bbl. increase by Caltex-Trinidad Leaseholds, Ltd., interests, and 600 bbl. daily in the smaller plants.

Inland consumption of products in the United Kingdom last year averaged about 340,000 bbl. daily and may reach 400,000 bbl. daily in 1953. Even adding another 60,000 bbl. daily for bunkers, this leaves some margin for export. Though expected to become a products exporter on balance, by volume, at least, Britain still imports certain items, particularly gasoline and kerosine.

Romanian Output Gaining

The Romanian oil industry exceeded its production quota for the third quarter of this year by 2.3 per cent, producing 28.1 per cent more crude oil

International Events

Pipe-Line Head

J. L. Burke active in U.S. transportation activities

J. L. BURKE, president of Service Pipe Line Co., has successfully combined the fields of transportation and law in his career.

He got his start in transportation with Frisco Railroad in Missouri, his native state. In 1920 he joined the traffic department of Sinclair Oil & Gas Co. in Tulsa. He became traffic manager of Sinclair Pipe Line Co. in 1924.

Burke continued as traffic manger when Sinclair Pipe Line Co. became Stanolind Pipe Line Co. in 1930. He was elected a company director in 1945 and was advanced to vice president, executive vice president, and finally to president in 1948.

The company name was changed to Service Pipe Line Co. in May 1950. One of the nation's largest transporters of crude oil, it currently moves more than one-sixth of the crude-oil traffic of all pipe lines reporting to the Interstate Commerce Commission.

For the past 2 years he has served as chairman of the Committee for Pipe Line Companies, a group recognized by Congress and governmental agencies as a dependable source on pipeline matters. He is a founding member of the American Society of Traffic and Transportation, and a director of the Transportation Association of America.

Other transportation groups of which he is a member include the general committee of the Division of Transportation of the American Petroleum Institute, the Transportation Council of the Department of Commerce, and the Transportation and Communication Committee of the United States Chamber of Commerce.

Burke is a member of the American, Oklahoma, and Tulsa Bar Associations and is an Interstate Commerce Commission practitioner. He also is a director of the Mid-Continent Oil and Gas Association.

Afton M. McConnell, tool pusher for Richardson & Stewart Drilling Co., at Eagle Lake, Tex., has been transferred to Cuero, Tex.

C. H. Jameson, Jr., J. J. Rupnik, T. E. Matson, and **A. L. Ballou, Jr.,** have been named special partners of Manhart, Millison & Beebe, Tulsa petroleum exploration consultants.

J. E. Mims, formerly acting Ozark division superintendent, for Shell Pipe Line Corp., has been transferred to Austin, Tex., as division superintendent of the Rancho pipe-line system. Named to succeed Mims at Springfield, Mo., is **C. P. Wilson,** formerly Bayou division superintendent at Port Neches, Tex. Wilson recently returned from service on the lightline project in Venezuela.

Charles S. Mitchell has been elected a vice president of Cities Service Oil Co. (Del.). He is a director of Cities Service Oil Co. and president of Cities Service Pipe Line Co. Prior to his election as president of the pipeline company, he was manager of crude-oil supply and transportation division of Cities Service Oil Co., a position he still holds.

C. Don Geiger, area geologist for Carter Oil Co., will be in charge of a new field office to be located in Liberal, Kans. Among those assisting him will be **James B. Nance, John R. Lathrop,** and **Clayton L. Roloson,** production geologists, and **Roy Kelly,** production foreman. **W. W. Solter,** area geologist, will be in charge of the new field office at Elk City. Others to be located in the Elk City office include **James B. Coffman,** production geologist; **Don D. Hendrie,** and **Thomas E. Witty,** geologists; and **Thomas K. Levy,** geophysical interpreter.

J. Howard Marshall, former president of Ashland Oil & Refining Co., has been elected vice president of Signal Oil & Gas Co., succeeding the late Donald R. Lycan. Marshall joined Signal last spring as a director and is in charge of exploration in the Mid-Continent area at Fort Worth.

Dr. Charles W. Perry, formerly assistant engineering manager for Wyandotte Chemicals Corp. at Wyandotte, Mich., has been appointed assistant central engineering manager for Mathieson Chemical Corp. at Baltimore, Md.

C. F. McCarroll, formerly a staff assistant in the production department of Sunray Oil Corp., Tulsa, has been transferred to the exploration department as administrative assistant to **Vice President H. O. Harder.**

C. F. McCARROLL

In a reorganization of the exploration department, **E. A. Markley,** Tulsa, was named manager of the geological division. Division geologists named by the company are **J. S. Loofbourow,** Pacific Coast area, Los Angeles; **Bert C. Timm,** Gulf Coast area; **T. A. Clote,** North and West Texas area; **Thom H. Green,** Rocky Mountain area; and **Sherril A. Shannon,** Mid-Continent area, all of Tulsa. District geologists are **Lawrence J. Finfrock,** Jackson, Miss.; **William M. Easley,** Corpus Christi; **R. B. Sullivan, Jr.,** Shreveport; **Clarence Symes, Jr.,** Midland; **Wilford L. Stapp,** Abilene, Tex.; **Glenn W. Sandberg,** Denver; **Eugene C. Eaton,** Casper, Wyo.; **Walter J. Slagle,** Oklahoma City; **E. A. Hutchinson,** Tulsa; **Ralph C. Lamb,** Wichita, Kans.; **Frank Devlin,** Durango, Colo.; **Joe Peerson,** Lake Charles, La.; senior geophysicists: **T. S. Green** and **Stefan Von Croy,** both of Tulsa.

Robert W. Griffith has been named administrative assistant to **H. W. Manley,** vice president of Sunray Oil Corp. in charge of manufacturing, sales and pipe-line activities. Griffith will be succeeded as manager of the gas-gasoline division of the department by **E. J. Mills,** formerly district superintendent of the gas-gasoline division at Snyder, Tex. **L. M. Ford,** formerly assistant superintendent of the gasoline plant at Snyder, has been named West Texas district superintendent of the gas-gasoline division. **N. C. Hillhouse,** superintendent of the gasoline plant at Earls-

Foreign Guests at Nomad's Party

Visitors at the New York chapter of Nomads' party at the Stork Club in New York City this month are shown above. Left to right, they are: R. W. Parker, California-Texas Oil Co., Australia; Granville Parker, The Texas Co., Bogota, Colombia; E. C. Hendrix, International General Electric Co., Caracas, Venezuela; Dennis Slatford, Trinidad Oilfield Service, Ltd., Trinidad, B.W.I.; George Lockett, Mene Grande Oil Co., Maracaibo, Venezuela; Carlos Bejarano, Motores, Bogota, Colombia; and J. Feger, Soc. Nationale des Petroles Aquitaine, Paris, France.

than during the corresponding 1951 period, according to a report released here by the Romanian legation.

The report, as is usual in all communist countries, discussed production only in terms of comparative percentages and gave no figures on volume. Based on percentages, however, Romanian state industries are out-performing those of Red Russia itself, with such accomplishments as increases of 940 per cent in the production of pneumatic hammers and 841.2 per cent in electric generators.

Much of the credit for the showing of the oil industry appears to go to a group of geologists who "on their own initiative" study means of putting back in operation a number of wells which have been abandoned by their former oil-company owners as unprofitable.

So far, the legation report said, a plan for the restoration of 38 wells had been carried out and production of the wells was already 29 per cent above their planned production.

Hague Office to Be Enlarged

Aramco Overseas Co., the service subsidiary of Arabian American Oil Co., is planning to establish a major European office at The Hague in the Netherlands.

At present, the company has only a few persons in its Hague office.

The Hague office will be concerned primarily with purchasing and engineering services for Aramco itself. Recruiting of personnel for work in Saudi Arabia will be only a minor part of its activities.

A recent report from The Hague disclosing Aramco Overseas' plans also said it its possible that the Rotterdam-Pernis refinery of the Caltex organization may be enlarged. Caltex's Pernis plant now has a capacity of about 28,000 bbl. daily.

Oil Search Lagging

The European refining industry has made remarkable progress in the past 4 years, but exploration and development on the continent has not kept pace.

Italy already is refining more oil than it uses, and French and English refineries are approaching surplus output, it was found by J. E. Brantly, assistant deputy petroleum administrator in charge of foreign operations, during his recent survey of the European oil industry.

The European refineries produce little aviation gasoline and currently are not planning any marked increase in facilities for that product, Brantly said. But they are approaching a point of surplus in lubricating-oil capacity.

Brantly attributed the lag in exploration and development of new oil resources to lack of venture capital. There are fair possibilities of finding oil in a number of countries if a sufficiently intensive effort is made, he said. Spain in particular is thought to offer good prospects.

During his trip Brantly devoted considerable attention to the trans-Atlantic trade in tubular goods, discussing with oil officials the possibilities of reducing the shipment of European goods to the United States and the export of U. S. material to Europe with a view to having each depend on its own supply as far as possible.

International Briefs

The tank farm and terminal which Petroleos Mexicanos is building at San Juan de los Lagos in the State of Jalisco is expected to be completed this month. The installation, supplied from the Salamanca refinery, is expected to solve product distribution problems in this part of western Mexico. Product lines will connect the terminal with Leon, Irapuato, Guanajuato, and other points.

Power of the cantonal governments in Switzerland to grant concessions for oil exploration has been confirmed by the federal cabinet of the Swiss Government. At a recent conference with cantonal government heads, the federal cabinet said the central government reserved the right to counter any concession grant that might endanger the country's security. There has recently been a revival of interest in Switzerland's somewhat slim oil prospects. Anglo-Iranian Oil Co., Ltd., formed a subsidiary to explore in the Canton of Fribourg. Swiss interests have been exploring near Luzerne.

Throughput of the Falconara refinery in Italy is expected to amount to approximately 600,000 tons, or about 12,000 bbl. daily, in 1953 as a result of new facilities now being completed. During the current year, the refinery, which is operated by Anonima Petroli Italiana, is expected to run about 450,000 tons, an average rate of 9,000 bbl. daily. The plant went on stream in December 1950 and in 1951 processed 265,000 tons, or about 5,300 bbl. daily.

The Shell organization is undertaking a 4-year exploration effort along a stretch of the East African Coast. This was disclosed recently in Mombasa, Kenya, by a Kenya Government official. It was also reported that Shell is expected to reach a decision within the next 3 months on construction of a new oil refinery near Mombasa. Earlier reports on this project indicated the plant would have a capacity of some 60,000 bbl. daily.

Petroleos Mexicanos was scheduled last week to place in operation its new 118-mile products pipe line from the Salamanca refinery in the State of Guanajuato to Lago de Moreno. Total construction time on the line was about 90 days. The project cost 10,000,000 pesos (about $1,160,000), including a pumping station at Salamanca and a storage terminal at Lago de Moreno, Pemex said.

Pipe-Line Head

J. L. Burke active in U.S. transportation activities

J. L. BURKE, president of Service Pipe Line Co., has successfully combined the fields of transportation and law in his career.

He got his start in transportation with Frisco Railroad in Missouri, his native state. In 1920 he joined the traffic department of Sinclair Oil & Gas Co. in Tulsa. He became traffic manager of Sinclair Pipe Line Co. in 1924.

Burke continued as traffic manger when Sinclair Pipe Line Co. became Stanolind Pipe Line Co. in 1930. He was elected a company director in 1945 and was advanced to vice president, executive vice president, and finally to president in 1948.

The company name was changed to Service Pipe Line Co. in May 1950. One of the nation's largest transporters of crude oil, it currently moves more than one-sixth of the crude-oil traffic of all pipe lines reporting to the Interstate Commerce Commission.

For the past 2 years he has served as chairman of the Committee for Pipe Line Companies, a group recognized by Congress and governmental agencies as a dependable source on pipeline matters. He is a founding member of the American Society of Traffic and Transportation, and a director of the Transportation Association of America.

Other transportation groups of which he is a member include the general committee of the Division of Transportation of the American Petroleum Institute, the Transportation Council of the Department of Commerce, and the Transportation and Communication Committee of the United States Chamber of Commerce.

Burke is a member of the American, Oklahoma, and Tulsa Bar Associations and is an Interstate Commerce Commission practitioner. He also is a director of the Mid-Continent Oil and Gas Association.

Afton M. McConnell, tool pusher for Richardson & Stewart Drilling Co., at Eagle Lake, Tex., has been transferred to Cuero, Tex.

C. H. Jameson, Jr., J. J. Rupnik, T. E. Matson, and **A. L. Ballou, Jr.,** have been named special partners of Manhart, Millison & Beebe, Tulsa petroleum exploration consultants.

J. E. Mims, formerly acting Ozark division superintendent, for Shell Pipe Line Corp., has been transferred to Austin, Tex., as division superintendent of the Rancho pipe-line system. Named to succeed Mims at Springfield, Mo., is **C. P. Wilson,** formerly Bayou division superintendent at Port Neches, Tex. Wilson recently returned from service on the lightline project in Venezuela.

Charles S. Mitchell has been elected a vice president of Cities Service Oil Co. (Del.). He is a director of Cities Service Oil Co. and president of Cities Service Pipe Line Co. Prior to his election as president of the pipeline company, he was manager of crude-oil supply and transportation division of Cities Service Oil Co., a position he still holds.

C. Don Geiger, area geologist for Carter Oil Co., will be in charge of a new field office to be located in Liberal, Kans. Among those assisting him will be **James B. Nance, John R. Lathrop,** and **Clayton L. Roloson,** production geologists, and **Roy Kelly,** production foreman. **W. W. Solter,** area geologist, will be in charge of the new field office at Elk City. Others to be located in the Elk City office include **James B. Coffman,** production geologist; **Don D. Hendrie,** and **Thomas E. Witty,** geologists; and **Thomas K. Levy,** geophysical interpreter.

J. Howard Marshall, former president of Ashland Oil & Refining Co., has been elected vice president of Signal Oil & Gas Co., succeeding the late Donald R. Lycan. Marshall joined Signal last spring as a director and is in charge of exploration in the Mid-Continent area at Fort Worth.

Dr. Charles W. Perry, formerly assistant engineering manager for Wyandotte Chemicals Corp. at Wyandotte, Mich., has been appointed assistant central engineering manager for Mathieson Chemical Corp. at Baltimore, Md.

C. F. McCarroll, formerly a staff assistant in the production department of Sunray Oil Corp., Tulsa, has been transferred to the exploration department as administrative assistant to **Vice President H. O. Harder.**

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PERSONALS

boro, Okla., has been appointed superintendent of the Snyder gasoline plant. **Paul Campbell,** superintendent of the Avant, Okla., gasoline plant, has been named superintendent of the Earlsboro gasoline plant. **Thomas M. Minihan,** formerly superintendent of the company's Rainbow gasoline plant near Oxford, Kans., has been transferred to Avant as gasoline plant superintendent.

H. E. Roach has been appointed district supervisor for the Texas Railroad Commission in its Refugio office. He replaces C. E. Peacock, who died recently.

Trevor W. W. Hill, a graduate assistant in the division of petroleum and natural-gas engineering of Pennsylvania State College, has been appointed a field engineer for Union Oil Co. of California at Whittier, Calif.

C. W. HARDELL

C. William Hardell, formerly general superintendent of Sinclair Rubber, Inc., has been appointed vice president and manager of manufacturing for Sinclair Chemicals, Inc. Both companies are subsidiaries of Sinclair Oil Corp. Also named to new posts with Sinclair Chemicals were: **Dr. Robert R. Chambers,** director of research; **Ray C. Smith,** manager of market development, and **Robert A. Wiegand,** secretary and administrative assistant to the executive vice president.

E. B. Laynge, coordinating assistant division manager for Continental Oil Co. at Salt Lake City, has resigned to become vice president and general manager of Wescott Oil Corp., Boise, Idaho. He has been succeeded by **C. W. Poll,** who has been with Continental since 1918.

John A. Fuller, president of Shawinigan Water & Power Co., has been appointed to the board of directors of British American Oil Co., Ltd., Toronto, Ont. He also is president of Quebec Power Co. and St. Maurice Power Corp.

Warren D. Hull of Celanese Corp. of America has been named manager of technical service for Canadian Chemical Co., Ltd., new Celanese subsidiary which is building a petrochemical plant at Edmonton, Alta.

S.E.G. Officials at Fort Worth Meeting

Attending the sixth annual midwestern meeting of the Society of Exploration Geophysicists were these officials of the national and local societies. Left to right are Roy L. Lay, The Texas Co., vice president of S.E.G.; Paul L. Lyons, Anchor Petroleum Co., editor of "Geophysics;" Curtis H. Johnson, General Petroleum Corp., president of S.E.G.; Carl L. Bryan, consultant, secretary-treasurer of S.E.G.; Fred K. Knight, Ohio Oil Co., president of Ark-La-Tex Geophysical Society; Bart W. Sorge, United Geophysical Co., chairman of S.E.G.'s safety committee; and Sigmund Hammer, Gulf Research & Development Co., past president of S.E.G.

L. T. Perry, tool pusher for Penrod Drilling Co., has been transferred from Snyder, Tex., to Ray, N. D.

James L. Parmelee, formerly manager of the exploration division of Northern Natural Gas Co., Omaha, Neb., has been appointed manager of the new area development department. The department was created to assist in the development of industry, agriculture and natural resources in the area served by the company.

K. T. FELDMAN

Karl T. Feldman, chief engineer for Platte Pipe Line Co., has returned to Sinclair Pipe Line Co. as chief engineer, succeeding **Earl W. Unruh.** Sinclair, a part owner of Platte Pipe Line, loaned Feldman when the latter company was formed 2 years ago. Feldman joined Sinclair in 1935 and in 1940 was assigned to the products pipe-line department in Harrisburg, Pa. Following service in the Army he became assistant chief engineer in the products pipe-line department at Columbus, Ohio, and eastern division engineer at Marion, Ohio.

Thomas A. Voorhees, formerly vice president of V. & V. Drilling Co., is now a student of petroleum engineering at New Mexico Institute of Mining and Technology, Socorro. The company is being dissolved as a result of the death of his father, R. F. Voorhees.

Bruce F. Grant, formerly of the U. S. Bureau of Mines, has been named director of the petroleum-engineering division of Sinclair Research Laboratories, Inc. He will make his headquarters in Tulsa. Grant recently has been in charge of designing and planning petroleum-research facilities at the new Morgantown, W. Va., station of the bureau.

Robert E. Dunn, formerly a district engineer for Magnolia Petroleum Co. at Salem, Ill., will soon become a petroleum engineer for Walter Duncan at Mount Vernon, Ill.

Harry A. Trees, Chicago, and **George S. Downey,** Tulsa, have been elected to the board of directors of Warren-Bradshaw Exploration Co., Inc. Trees is a partner of Paul H. Davis & Co., Chicago law firm, and a member of the board of directors of General Finance Corp., Chicago, and National Tank Co., Tulsa. Downey is a partner in the law firm of Steele, Daugherty & Downey, Tulsa.

PERSONALS

A. E. Lain, operations engineer for Shell Pipe Line Corp., Houston, has been appointed acting area engineer at Colorado City, Tex.

Cloe Browning, geologist for Sinclair Oil & Gas Co., has been transferred from Scotts Bluff, Neb., to Oklahoma City.

Steve C. Maples, geologist for Sohio Petroleum Co., has been transferred from Oklahoma City to Midland, Tex.

Willson H. Green, formerly a junior petroleum engineer for Stanolind Oil & Gas Co., at Andrews, Tex., has been appointed a petroleum engineer for Signal Oil & Gas Co. at Fort Worth.

George H. Forster, Jr., has been transferred from Long Beach to Santa Paula, Calif., and promoted from assistant gas man to district gas man for The Texas Co. He will continue his duties as secretary of the Southern California Meter Association. **T. F. Smith,** formerly head field tester, succeeds Forster in the Los Angeles basin area.

Jewel Alton Petty, an engineering trainee for Magnolia Petroleum Co. at Hobbs, N. M., has been promoted to petroleum engineer at Kilgore, Tex.

L. T. Clark, formerly a party chief for Oil Exploration, Inc., at Yuma, Colo., has been appointed a supervisor for Continental Geophysical Co. at Fort Worth.

Richard E. Lauterbach, assistant manager of General Petroleum Corp.'s Torrance, Calif., refinery, has been named manager of the firm's Pacific Northwest refinery to be built in Ferndale, Wash.

Carroll E. Gregg has been appointed general superintendent of plants for Texas Natural Gasoline Corp. He formerly was supervising engineer for Geier-Jackson, Inc., Dallas, in charge of gas cycling, oil refining operations, maintenance, and construction. Previously he was an operating specialist for Gasoline Plant Construction Corp. at Houston and district engineer for Fluor Corp., Ltd., at Houston.

B. A. Cabaniss, formerly Southwest district manager for Sperry-Sun Well Surveying Co., has been appointed Lafayette district manager, in charge of Louisiana and Mississippi.

DEATHS

Theodore R. Stout, 51, a rig builder, died recently in Fairfax, Okla. He recently had been employed by Flint Steel Corp., and formerly was with Royal Dutch-Shell in Venezuela.

Harry Thomas McGee, a Tyler, Tex., independent operator and lease broker who recently moved to Florida, was killed in an automobile accident November 11.

David L. Thomas, 77, who retired in 1940 as secretary and treasurer of the Southern Group Pipe Lines, died November 11 in Oil City, Pa. He had been with the company 50 years.

Frank Sheets, 57, superintendent for Francis T. Canon, Michigan driller, died November 9. Sheets went to Michigan from West Virginia in 1930 and for many years was employed by J. C. Arthurs Co., cable-tool drilling contractors.

James S. Wallace, 79, executive vice president of Richfield Oil Corp. until his retirement in 1938, died in Los Angeles recently. A native of Newville, Pa., Wallace moved to Los Angeles 51 years ago.

MacLean Houston, 60, production manager for United Refining Co., Warren, Pa., died November 14 at his home there. He formerly was associated with Cities Service Co., the old Franklin Quality Oil Refinery Co., and Warren Refinery Co. He had been with United Refining Co. since 1925.

E. D. Emrick, 61, petroleum geologist credited with discovering nine oil and gas fields in Montana, Wyoming, and Colorado, died November 17.

Julius (Jay) Heeren, 47, assistant professor in the department of petroleum engineering of Colorado School of Mines, Golden, died November 15 of a blood infection. For several years he was an engineer for Stanolind Oil & Gas Co.

Dr. John M. Pearson, 48, director of Sun Oil Co.'s physical laboratory for research and development in Philadelphia, died November 16 in Swarthmore, a nearby suburb.

Fred J. Hill, about 52, West Texas independent who recently moved to Houston, died in Houston November 16. He at one time was a scout for the old Cosden Oil & Gas Co. in Tulsa and later represented Cosden at Holdenville, Okla., during the Greater Seminole oil boom.

Charles J. Wilkinson, 55, formerly a foreman for Mid-Continent Petroleum Corp., died at Broken Arrow, Okla., November 18.

Oliver U. Bradley, 78, oil inspector for the Five Civilized Tribes Agency from 1912 to 1947, died November 15 at Muskogee, Okla. He supervised oil operations on Indian leases during the development of Glenn Pool and Cushing fields.

Kirby Richard Ricks, 64, area foreman at Maryland tank farm for Esso Standard Oil Co., died recently at Baton Rouge General Hospital.

Frank H. E. Hane, 44, founder and owner of Magnum Oil Co., died November 7 in Los Angeles.

Patrick J. O'Brien, 77, retired superintendent for Bennett Drilling Co., died November 17 in a Tulsa hospital. He was the contractor on the discovery well of Wetumka (Oklahoma) oil field in 1922.

Jacob Kissinger, 77, formerly secretary-treasurer of the Oil Well Supply Division of U. S. Steel Corp., died November 14 in Los Angeles.

Thomas Hackney Cox, an independent mud engineer at Odessa, Tex., was killed in a hunting accident near there November 18.

John Alfred Wilcox, Whittier, Calif., president and one of the founders of the S. R. Bowen Co., manufacturers of oil well equipment, died November 18.

JOURNAL REPORT:

Drilling and Producing Regulations

. . . of the Texas Railroad Commission

by Roy F. Carlson
West Texas District Editor

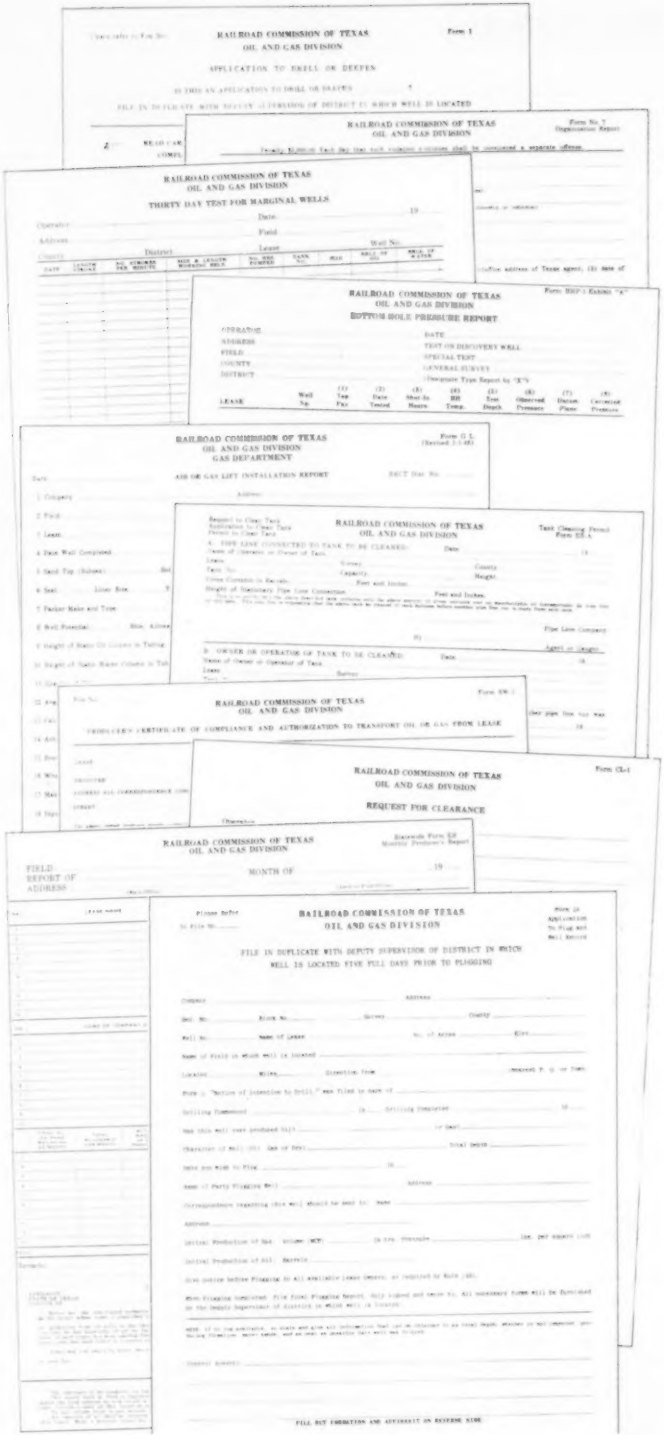
In every phase of oil-industry operation in Texas, center of United States drilling and production, there is some influence exerted by the Texas Railroad Commission. Reports are required by the commission from all segments of the industry concerning the drilling, production, transportation, and refining and marketing of crude oil and natural gas and their product.

Because of the importance and the effect of this influence on oil-industry operations, The Oil and Gas Journal has here summarized some of the rules of the commission and traced some of its operation. Only those regulations and reports concerning the drilling and production of crude oil are given here.

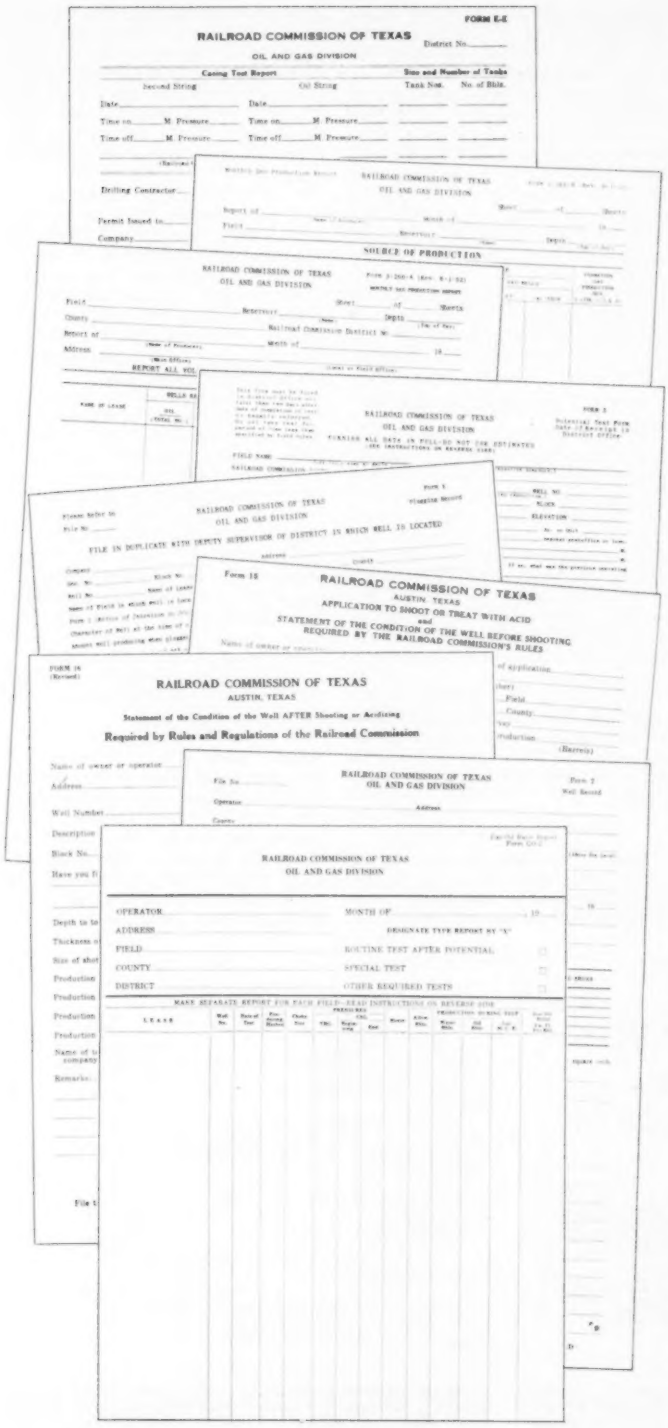
THE Texas Railroad Commission, through its oil and gas division, has been designated, empowered, and authorized by the State of Texas to exercise jurisdictional control over drilling and production of oil and gas in Texas to prevent waste of those resources, confiscation of those resources, and to protect the correlative rights of owners of oil and gas minerals or leases.

To implement this control, the Railroad Commission has set up district offices throughout the state to which oil and gas producers report their operations. These offices, together with supervisory personnel of the oil and gas division in Austin, are listed elsewhere in this report.

In order to follow the operations of oil and gas producers in each of the dis-


RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
APPLICATION TO DRILL OR DEEPEN
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
THIRTY DAY TEST FOR MARGINAL WELLS
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
BOTTOM HOLE PRESSURE REPORT
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
GAS DEPARTMENT
GAS OR GAS LIFT INSTALLATION REPORT
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
TANK CLEANING PERMIT
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
PRODUCER'S CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO TRANSPORT OIL OR GAS FROM LEASE
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
REQUEST FOR CLEARANCE
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
MONTH OF
RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
FILE IN DUPLICATE WITH DEPUTY SUPERVISOR OF DISTRICT IN WHICH WELL IS LOCATED FIVE FULL DAYS PRIOR TO PLUGGING

On this and the opposite page are shown some of the forms on which operators fill in reports to the Texas Railroad Commission. Other forms and affidavits to be executed from time to time are: Application for Dual Completion, Packer Setting Affidavit, Request for Permission to Consolidate Leases, Packer Leakage Test, and Permit to Dispose of Clean-Out Residue.



tricts, several kinds of reports must be completed and filed with the district or with the commission as various steps in the drilling and completion of oil or gas wells, or the sale of production therefrom take place.

Taking these reports in chronological order from the time a drilling project is decided upon, most of the reports required are as follows. Only reports concerning oil wells are included.

Form 1—Application to Drill or Deepen

This form is known as the "Application to Drill or Deepen," and is the only one required before drilling operations begin. Its purpose is to determine whether the proposed drilling operation and its location meet spacing regulations set down by the commission. The form includes such data as the name of the producer, the name and size of the lease on which the well is to be drilled, the location of the lease by survey, section, and block number, and the kind of drilling operation proposed. The form includes space for a sketch showing the position of the proposed well location with regard to property or lease lines and its distance from any existing wells on the lease. This sketch may be attached if desired. Data on the form must be notarized.

Under the threat of a penalty, no drilling operation can begin prior to the time a drilling permit has been granted by the Railroad Commission, and prior to the elapse of any waiting period prescribed by the commission. Penalty for commencement of drilling before this time is loss of production in any completed oil or gas well for a time equal to that by which the operator exceeded the designated starting date.

Permit for a well drilled in conformance with field rules or the state-wide spacing rule is granted by a letter of acknowledgment from the commission. If the well is an exception to either rule, a hearing must be held before the commission.

There is no exact definition of what constitutes beginning of drilling. However, it is often taken to mean actual spudding of the well rather than grading or preparing a location.

Form 7—Organization Report

The organization report must be filed by any person or organization operating in Texas for the purpose of drilling or producing an oil or gas well, or owning or controlling leases of mineral rights, or the transportation of oil or gas by pipe line. Failure to file this report can result in a fine, with each day of violation considered a separate offense.

The report lists the name of the company, together with its address, the plan

of organization, and the names and addresses of trustees, officers, and directors. When changes occur in any of these items, the commission must be notified. Otherwise the report needs to be filed only once.

Form 2—Well Record

Upon completion of the well as a producer of gas, oil, or distillate, a well-record form must be filed with the Railroad Commission through the deputy supervisor in the district in which the drilling operation is located.

This form includes a record of all formations encountered in the drilling of the well, ordinarily by type, sandstone, limestone, etc. A record of casing put into the well must also be submitted in the proper place on the form with a corresponding account of how much was removed from the hole and how much was left in the hole.

An account of the initial production of the well must also be given, whether oil, gas, or distillate. A sketch of the property is also included on the form, along with information about the well's location. This sketch may be a separate attachment.

The completion date is set at the discretion of the operator, when he decides that the well is ready to begin production.

The reference to water in Form 2 concerns any water found in the well.

This report constitutes the log asked for in other reports. Electric logs are not required except in dually completed wells.

Form 2-A—P. and A. Application

If the well is a dry hole it must be plugged and abandoned, and this completion report must be filed with the district deputy supervisor. It is known as the Application to Plug and Abandon, and must be filed at least 5 full days prior to the date on which the well is to be plugged.

This report also includes a record of formations encountered in the drilling of a well, data concerning any kind of production ever obtained from the well, and requires that all surrounding lease owners be notified of the intention to plug. As with many of the other reports, the data on the report are required to be sworn to before a notary public.

The well must be plugged within 20 days after drilling ceases, or some future plans for the well must be outlined to the commission if the commission calls for a plugging report.

Form 4—Plugging Record

Upon completion of plugging operations, permit for which were received through Form 2-A, this plugging record must be filed. This report gives a complete account of the plugging operation, including whether or not the well was producing oil, gas, or water at the time of plugging, its depth, the depth of producing sands, how the well was plugged, casing in the hole, location of water, oil, and gas formations, and the names and addresses of adjacent royalty and landowners.

This form is filed with the deputy supervisor of the district, and includes all necessary information about the location of the well. The information must be sworn to before a notary public.

Form 3—Potential Tests

Possibly the most detailed and involved form with which an oil producer must deal in completing a well is that called the Potential Test Form. It must be filed not later than 10 days after completion of the test subject to a penalty of loss of production from the completed well. It normally accompanies the completion report, Form 20. It is filed only in the case of a completed producing oil well. If the well is a gas well, a different form must be completed.

If the potential test results are not filed within the required 10 days, then any allowable granted will begin not more than 10 days ahead of the day of receipt of the test form. The test must be witnessed by a representative of the company making the test, a representative of the offset operator, the pipe line gager, and a representative of the Texas Railroad Commission.

The test form requires a detailed account of the location of the well, the equipment used in the well, including casing, tubing, well-head installation, pay horizon, and an account of the other producing wells on the lease.

A test of a flowing well must include the following information: flowing pressure on casing and tubing, length of test, size and make of choke, size of any acid or explosive shot used, oil produced during the test with tank gages, gas-oil ratio during test, and gravity of oil produced during test.

The test must be run in accordance with field rules, or in accordance with commission regulations.

Surface casing . . . A surface-casing report must be attached to the potential test form to show that commission and field rules have been followed in setting surface casing. Data about the depth, the manner of cementing, and depth to fresh-water strata are required to show that all fresh-water strata are protected from contaminaion by oil,

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

OIL AND GAS DOCKET NOS. 106, 120, 123, 124, 125, 126, 128, 129, 132, and 146

IN RE: CONSERVATION AND PREVENTION OF WASTE OF CRUDE PETROLEUM AND NATURAL GAS IN THE STATE OF T E X A S

#20 - 24,527

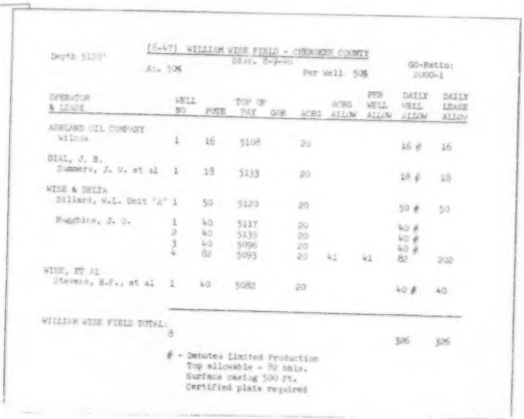
Austin, Texas
September 19, 1952

SPECIAL ORDER FIXING THE ALLOWABLE PRODUCTION OF CRUDE OIL IN THE VARIOUS FIELDS, AND DISTRICTS IN TEXAS

DISTRICT III.

Not more than Six Hundred Forty-five Thousand Two Hundred Forty-Three (645,243) barrels of crude oil shall be produced from Commission District No. 3 of Texas during any day of the effective period of this order, and said amount is hereby allocated, distributed to, and herein authorized and permitted to be produced from the various fields, in said Commission district as follows:

Ace (2nd wilcox)	160	Arnia, East	91	Beaumont	1723
Aldine	38	Arriola	300	Beaumont, West	1611
Allen	101	Arthur Harvey(wilcox)	320	Beaumont, West (Ket)	36
Alta Loma	198	Bammel	199	Beaumont, West (4900'2)	25
Anelia	3815	Bammel, So.(ConroeSd.)	60	Beech Creek	344
Anahuac	27336	Bancroft, No.(wilcox)	274	Beech Creek, East	171



(6-47) WILLIAM WISE FIELD - CHEROKEE COUNTY
Dist. 5-Spac.
Ac. 506 Per Well 506
GO-Ratio: 2000-1

Depth 5120'

OPERATOR & LEASE	WELL NO	POTE	TOP OF PAY	GOR	ACRG	ACRG ALLOW	PER WELL ALLOW	DAILY WELL ALLOW	DAILY LEASE ALLOW
ASHLAND OIL COMPANY									
Wilcox	1	16	5108	20				16 #	16
DIAL, J. B.									
Summers, J. W. et al	1	18	5133	20				18 #	18
WISE & DELTA									
Dillard, W.L. Unit "A"	1	50	5129	20				50 #	50
Hughins, J. O.	1	40	5127	20				40 #	
	2	40	5135	20				40 #	
	3	40	5096	20				40 #	
	4	82	5093	20	41	41		82	202
WISE, ET AL									
Stevens, B.F., et al	1	40	5082	20				40 #	40
WILLIAM WISE FIELD TOTAL:	8							326	326

- Denotes Limited Production
Top allowable - 82 bbls.
Surface casing 500 ft.
Certified plats required

ACTION TAKEN by the Texas Railroad Commission, as a result of the various required applications and forms, is exemplified by these orders concerning crude production. At left is a portion of an order fixing the allowable production of crude in the various fields in District 3. At right is a detailed order giving allowables for individual wells in the William Wise field of Cherokee County.

gas, or water from strata other than fresh-water strata.

The test must be run in accordance with state-wide regulations or special field rules. The test must be run at least long enough to produce its allowable as established by the yardstick allowable rule. It cannot be conducted for a longer period of time than 24 hours, however. Retests of the well may be run at any time at the discretion of the operator. The test must be run on all new wells, and it may be run on any well at the request of the commission.

Vacuum pumps cannot be used in conducting this test.

Forms 15 and 16—Shooting and Acidizing

If during the course of completing a well as a producer of oil, gas, or distillate, it becomes necessary to treat the well with acid, or to shoot the well with explosive, application must be made with the deputy supervisor of the Railroad Commission in the proper district for permission to conduct such a shooting or acidizing operation. Upon completion of the shot or acidizing operation, results of that test must also be filed.

Form 15 . . . The application and statement of condition of the well before shooting is made on Railroad Commission Form 15. The form includes a description of the well as to location, production from that well of oil and water, where and on what kind of shoulder the production string of casing is set, the formation to be shot or treated and its top and bottom, and the size of such shot or acid treatment. Precautions to be followed in protecting the casing seat, protecting any water saturated formations, and any shale partings in the formation are also listed along with the name of the torpedo or treating company.

Form 16 . . . This is a statement of the condition of the well after shooting or acidizing. Besides a description of the well concerned, if a well is shot it asks for the depth to the top of the pay, the thickness of the pay shot, size of shot used, production before and after the shot, amount of production increase or decrease, and name of torpedo or shooting company. If the well is acidized, the amount of acid used must be given along with the above production information and the name of the acid company.

Form CL-1, Request for Clearance

Before any oil is moved from a lease that is produced during completion operations before an allowable is assigned, a request for clearance may be filed with the district office of the Railroad Commission. The amount of oil necessarily produced during such an operation must be estimated, the pipe-line connection involved stated, the reasons for the request given, and an outline of the time and tools involved in such completion given. Storage capacity of tankage involved in the completion must be given with the daily allowable production from any other wells on the lease.

Any production moved during this test is overproduction and must be made up by shutting in the well after completion.

Form SW-1, Authorization to Transport

Before any oil or gas is transported from a lease the oil producer must file a certificate of compliance and an authorization to transport oil or gas with the Railroad Commission. This form lists the producer's name and address and the name and address of the prospective buyer of production. Provision is made for authorization of a split connection, showing what percentages each of the gatherers is taking.

A separate report must be filed for each lease and for each gatherer of crude oil or gas, and each report must consist of four duplicate originals. These are filed with the office of the deputy supervisor of the district in which the lease is located. After the report has been registered by the Railroad Commission officer and assigned an SW-1 serial number, two copies are returned to the producer, one of which is forwarded to the gatherer of lease production.

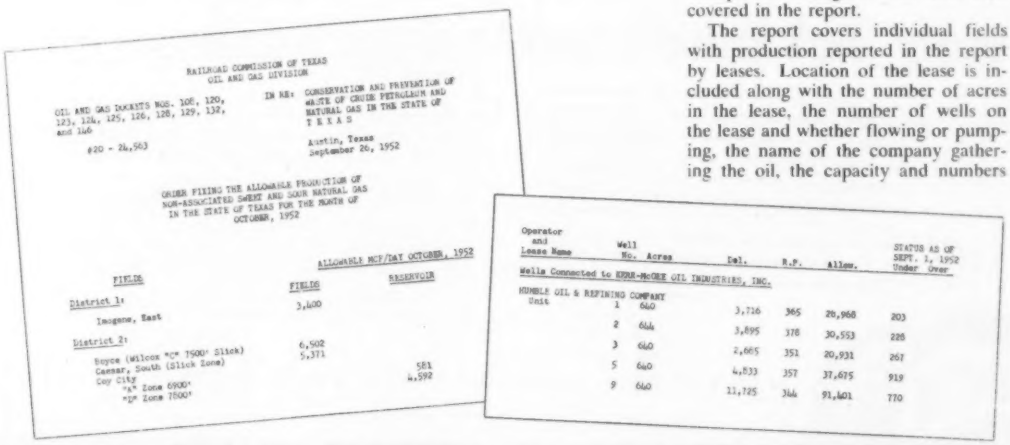
A subsequent report must be filed by the producer if operating ownership changes, or the lease is subdivided or consolidated with another, in which case a plat must be submitted to the commission showing the changes, when the gatherer is changed, or when the certificate of compliance is canceled by the commission.

This certificate of compliance may be revoked by the commission at any time the producer fails to comply with rules and regulations of the commission.

State-wide Form EB, Monthly Producers' Report

On or before the fifteenth day of each calendar month each producer of oil must file with the deputy supervisor of the proper district an account of production taken from each field for the preceding month. It must be filed in duplicate with the deputy supervisor, and copies must be furnished to each transporter moving oil from each lease covered in the report.

The report covers individual fields with production reported in the report by leases. Location of the lease is included along with the number of acres in the lease, the number of wells on the lease and whether flowing or pumping, the name of the company gathering the oil, the capacity and numbers



RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

OIL AND GAS DOCKETS NOS. 108, 120, 123, 124, 125, 126, 128, 129, 132, and 146

IN RE: CONSERVATION AND PREVENTION OF WASTE OF CRUDE PETROLEUM AND NATURAL GAS IN THE STATE OF TEXAS

#20 - 24,563

Austin, Texas
September 20, 1952

ORDER FIXING THE ALLOWABLE PRODUCTION OF NON-ASSOCIATED SWEET AND SOUR NATURAL GAS IN THE STATE OF TEXAS FOR THE MONTH OF OCTOBER, 1952

ALLOWABLE MCF/DAY OCTOBER, 1952

FIELDS	FIELDS	RESERVOIR
District 1:		
Imogene, East	3,400	
District 2:		
Boyce (Wilcox "C" 7500' Slick)	6,502	
Caesar, South (Slick Zone)	5,371	
Coy City		581
"A" Zone 6900'		4,592
"B" Zone 7800'		

Operator and Lease Name	Well No.	Acres	Bbl.	B.P.	Allow.	STATUS AS OF SEPT. 1, 1952 Under	Over
Wells Connected to ESSO-McCOMB OIL INDUSTRIES, INC.							
HUMBLE OIL & REFINING COMPANY							
Unit	1	640	3,716	365	28,968	203	
	2	644	3,895	378	30,553	226	
	3	640	2,665	351	20,931	267	
	5	640	4,833	357	37,675	919	
	9	640	11,725	344	91,401	770	

ALSO TYPICAL of commission action are these orders fixing the allowable production of natural gas. At left is a portion of an order regulating production by fields in Districts 1 and 2; at right is a more detailed order regulating gas production well by well.

of tanks containing lease oil, the allowable for the month, production for the month, the amount of over or underproduction for the month, and the disposition of the oil. This report must be notarized.

Form GO-2, Gas-Oil-Ratio Report

Another of the periodic reports usually quarterly required of all oil producers is an account of gas-oil-ratio tests. The report is required, however, only when so ordered by the Railroad Commission. When required, it must be filed with the district office of the commission not later than the fifteenth day of the month immediately following the period covered by the report, when taken as a part of a field-wide survey.

The method of measuring gas volume must follow suggested methods of measuring gas volume, or be methods of at least equal accuracy. Gas production must be measured at 14.65 psi. and 60° F. Tests must be made by a person qualified to make such tests.

The tests must be run separately for each well in a field but may be submitted in one report by each operator in that field for his wells. Choke sizes; tubing and casing pressures; producing method; length of test; well allowable; water, oil, and gas production, are all required to be reported for each well, along with the gas-oil ratio.

Detailed instructions for conducting the test are listed on the GO-2 form.

Many of the old fields are exempt from submission of this report because of exhaustion of most of the gas in the field. The fields on which the reports are required are listed on commission orders covering gas-oil ratio.

For excess gas-oil-ratio wells—over 2,000 to 1—a GO-2 form must be filed within 30 days after taking a potential test. The form must be filed not later than 5 days after it is taken, when a test is required on an individual well.

Form 3-266-A and 3-266-B; Gas Production Report

This monthly gas production report must be filed with the commission deputy supervisor in the proper district for each reservoir. Its purpose is to record source of production and disposition of all gas produced from either gas wells or oil wells. Disposition includes the lease and field fuel system, gas lift, repressuring and pressure maintenance, transmission lines, processing plants, carbon-black plants, vented or flared, underground storage, or other disposition with totals.

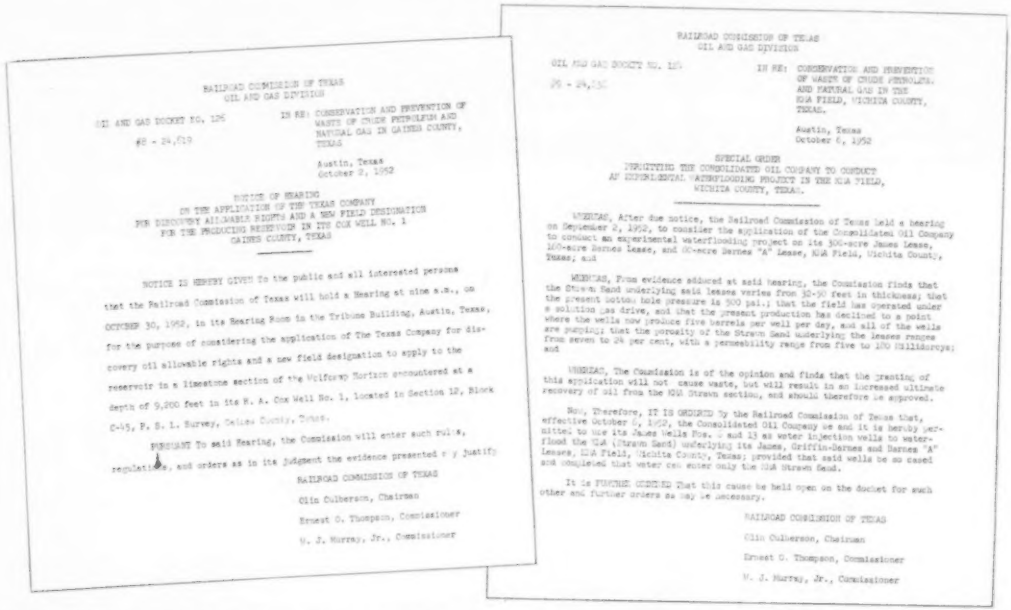
All volumes must be reported in accordance with the gas-measurement law, at a base pressure of 14.65 psia. and a base temperature of 60° F. The report must be filed not later than the last day of the month following the period reported. Form 3-266-B is a supplementary report sheet provided to furnish additional space for reporting source of gas.

Miscellaneous Reports

Several additional reports may be required for other types of installations in oil wells, or other nonroutine practices. One of these is the casing test report, Form E-E. This report is required to report results of casing testing as called for by commission rules. Besides results of tests of the casing, it includes detailed information on the completion.

A report must also be filed with the commission to obtain approval for cleaning and processing of tank bottoms. This report form, Tank Cleaning Permit Form ES-A, lists a request from the pipe-line company connected to the tank, a request from the operator holding oil in the tank, and a check by a representative of the commission. If the tank bottoms are to be processed in a treating plant, that plant must also be listed. Of course, the gross contents of the tank to be cleaned must be measured and given. The form must be filled out in quadruplicate, the owner retaining one copy, the commission receiving one copy, and the treating plant two copies, one of which must be filed with the commission within 48 hours after the tank has been cleaned.

If a well is to be equipped with gas-lifting devices, Form GL must be filed with the commission. The form in-



RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

OIL AND GAS DOCKET NO. 126 — IN RE: CONSERVATION AND PREVENTION OF WASTE OF CRUDE PETROLEUM AND NATURAL GAS IN GAINES COUNTY, TEXAS

48 - 24,619

Austin, Texas
October 2, 1952

NOTICE OF HEARING
ON THE APPLICATION OF THE TEXAS COMPANY
FOR DISCOVERY ALLOWABLE RIGHTS AND A NEW FIELD DESIGNATION
FOR THE PRODUCING RESERVOIR IN ITS OIL WELL NO. 1
GAINES COUNTY, TEXAS

NOTICE IS HEREBY GIVEN to the public and all interested persons that the Railroad Commission of Texas will hold a Hearing at nine a.m., on OCTOBER 30, 1952, in its Hearing Room in the Tribune Building, Austin, Texas, for the purpose of considering the application of The Texas Company for discovery oil allowable rights and a new field designation to apply to the reservoir in a limestone section of the Wolfcamp Horizon encountered at a depth of 9,200 feet in its H. A. Cox Well No. 1, located in Section 12, Block C-45, P. S. L. Survey, Gaines County, Texas.

PURSUANT To said Hearing, the Commission will enter such rules, regulations, and orders as in its judgment the evidence presented may justify.

RAILROAD COMMISSION OF TEXAS
Olin Culberson, Chairman
Ernest O. Thompson, Commissioner
W. J. Murray, Jr., Commissioner

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

OIL AND GAS DOCKET NO. 126 — IN RE: CONSERVATION AND PREVENTION OF WASTE OF CRUDE PETROLEUM AND NATURAL GAS IN THE KSA FIELD, WICHITA COUNTY, TEXAS.

20 - 24,536

Austin, Texas
October 6, 1952

SPECIAL ORDER
PERMITTING THE CONSOLIDATED OIL COMPANY TO CONDUCT AN EXPERIMENTAL WATERFLOODING PROJECT IN THE KSA FIELD, WICHITA COUNTY, TEXAS.

WHEREAS, After due notice, the Railroad Commission of Texas held a hearing on September 2, 1952, to consider the application of the Consolidated Oil Company to conduct an experimental waterflooding project on its 306-acre James Lease, 160-acre Barnes Lease, and 80-acre Barnes "A" Lease, KSA Field, Wichita County, Texas; and

WHEREAS, From evidence adduced at said hearing, the Commission finds that the Strawn Sand underlying said leases varies from 30-90 feet in thickness; that the present bottom hole pressure is 900 psi.; that the field has operated under a solution gas drive, and that the present production has declined to a point where the wells now produce five barrels per well per day, and all of the wells are pumping; that the porosity of the Strawn Sand underlying the leases ranges from seven to 24 per cent, with a permeability range from five to 100 Millidarcys; and

WHEREAS, The Commission is of the opinion and finds that the granting of this application will not cause waste, but will result in an increased ultimate recovery of oil from the KSA Strawn section, and should therefore be approved.

NOW, Therefore, IT IS ORDERED by the Railroad Commission of Texas that, effective October 6, 1952, the Consolidated Oil Company be and it is hereby permitted to use its James Wells Nos. 4 and 13 as water injection wells to waterflood the KSA (Strawn Sand) underlying its James, Griffin-Barnes and Barnes "A" Leases, KSA Field, Wichita County, Texas; provided that said wells be so cased and completed that water can enter only the KSA Strawn Sand.

It is FURTHER ORDERED That this cause be held open on the docket for such other and further orders as may be necessary.

RAILROAD COMMISSION OF TEXAS
Olin Culberson, Chairman
Ernest O. Thompson, Commissioner
W. J. Murray, Jr., Commissioner

IN ADDITION to orders fixing allowables for oil and gas production, the commission also issues many other special orders, notices of hearings, etc. Representative of these actions are, left, notice of hearing on application of a producer for discovery allowable rights and new field designation. At right is a special order authorizing an experimental water flood.

This modern machine is next to infallible—yet even so, the Bethlehem operator checks the reduction of his wire.

His attention to detail means better rope for you

Wire-drawing is a fundamental step in the making of Bethlehem rope, and it's done on machines that almost never make mistakes. Nevertheless, this operator, like others in the Bethlehem mill, runs frequent checks on the work going through. He wants to be sure that his part of the job meets the specified standards—which are very, very high.

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BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

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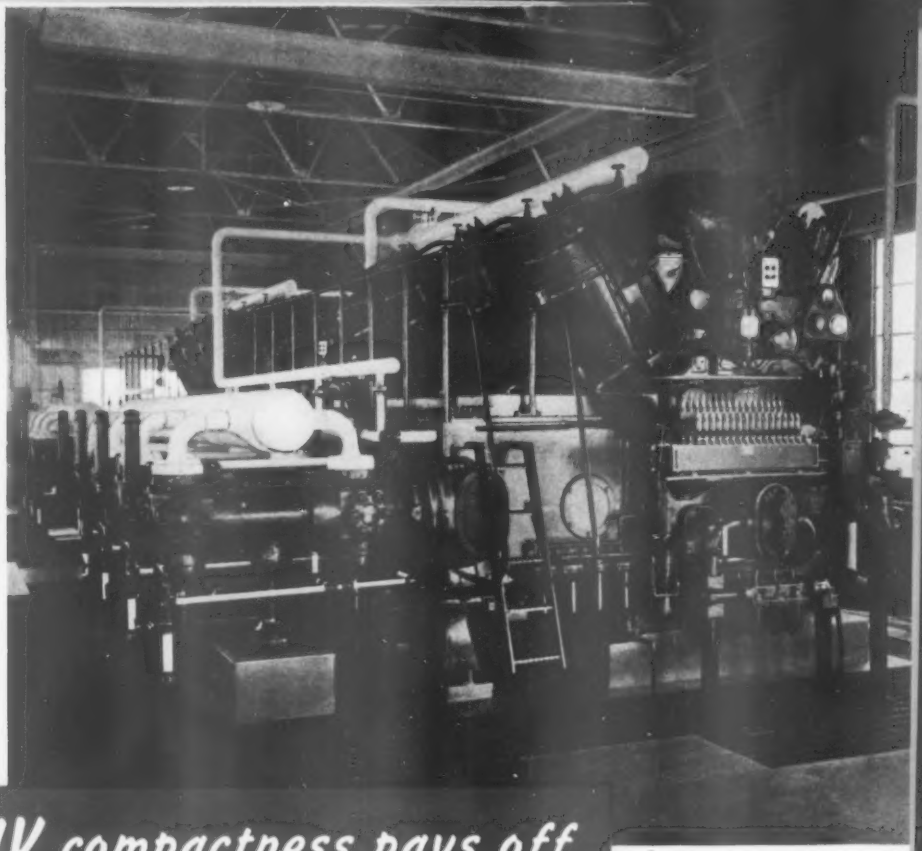
Over 6 million Cooper-Bessemer Compressor Horsepower NOW IN USE!



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IN THE ELMORE, OKLAHOMA FIELD

ON job after job, GMV design pays dividends . . . in minimum foundation costs, smaller plant buildings, less piping, easier maintenance. This repressuring installation is a good example.

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Caracas, Venezuela Gloucester, Mass. Tulsa, Okla. New Orleans, La.

cludes well data before and after installation of such hookup, including oil and gas-production data, and a drawing and description of the installation.

Bottom-hole-pressure reports are filed on Form BHP-1 Exhibit "A." The report includes lease name and well number with the length of the test, the depth, temperature, and observed and corrected pressures of such tests. Detailed instructions are given on the report form. Pressure tests must be run on the discovery well of a new field and reported within 60 days of completion of wells and not later than the fifteenth of the month following month in which test was run.

To determine whether or not a well is marginal, a 30-day test must be run on the well and reported to the commission giving the results of such test, such as all pumping information including length and frequency of stroke, size and length of working barrel, number of hours pumped, and the barrels of oil and water pumped. A marginal well is defined as any well incapable of producing its maximum capacity below a certain limit except through artificial lift and which well, so equipped, must produce this production or lose oil otherwise ultimately recoverable. A well is marginal if its maximum capacity is less than 10 bbl. per day average over a 30-day period from a depth of 2,000 ft. or less; 20 bbl. per day or less, 30-day average, from 2,000 to 4,000 ft.; 25 bbl. per day, 30-day average, from 4,000 to 6,000 ft., 30 bbl. per day or less, 30-day average, from 6,000 to 8,000 ft.; and 35 bbl. per day, 30-day average, from over 8,000 ft.

A form much like the tank-cleaning permit must be filed with the commission to obtain permission to dispose of residue collected in cleaning up a well after shooting or acidizing. The method of disposal must be stated, and if the residue was sent to a treating plant the amount of residue treated must be stated and an affidavit to that effect must be made by the treating plant.

If a well is to be dually completed in zones determined to be feasible for that kind of completion, an application for such installation must be made with the commission. Reservoirs feasible for such completion are designated by the commission. If they are not so designated, a hearing must be held to determine the feasibility. The application submits facts about the reservoir and must be accompanied by an electric log showing tops and bottoms of producing zones, locations of perforations, an affidavit of packer setting, a sketch of the dual completion, and results of a packer leakage test. All offset operators to the lease on which the completion is to be made must be listed, and the application should be accompanied

"Texas R. R. Commission has fixed allowable for any oil well before well is drilled"

by letters waiving notice of hearing from each of the offset operators. In lieu of these, copies of letters to these operators requesting such waiver must be included with the application.

The packer-setting affidavit is filled out by the company or firm setting the packer and is sworn to before a notary public. The leakage test is also a notarized form and is witnessed or checked by a representative of the Railroad Commission. Leakage by the packer between producing horizons is determined by comparison of shut-in pressures on both the horizons and flowing pressures of each of the horizons, and stabilized shut-in pressures before the test is begun.

Consolidation of leases also requires reporting to the commission on a special form. The name of the leases to be consolidated, the way the consolidated lease is to be named and reported, acreages involved, a statement of ownership, and any change in well numbers must be included. A plat must also be submitted showing leases before and after consolidation.

It may also become necessary to file a well status and water report upon wells, if the commission deems it necessary.

Other reports must be submitted by the oil operators to the comptroller's office of the State of Texas for purposes of determining revenue. These include a report of sales of crude oil and natural gas, gross production, and gross receipts. These are filed monthly, and are Forms 200, 202, and 250.

Well Allowables

The initial allowable for any oil well is fixed even before that well is drilled, by a predetermined scale based on depth. This formula is called the 1947 yardstick, and is listed below. However, to encourage deeper drilling and additional drilling of other wildcats the commission has provided an incentive in the form of a discovery allowable given to wells in a new field.

These allowables are also based on depth and are also tabulated here. The discovery allowables are given to the first five wells completed in a new field, or until the sixth well is completed, or for a period of 18 months, whichever is the sooner. After this period, the production is allocated by the previously mentioned 1947 yardstick. The discovery allowable permits the well to be produced without shutdown days, every day of the month.

For the purpose of allocating allowable production, each month is a unit with a given number of producing days per month granted to oil fields on the basis of state-wide hearings held each month, at which hearings refiners of crude oil tell of their needs for crude.

During any month, therefore, an oil producer may produce and sell a certain amount of oil, determined by the yardstick allowable or at an allowable rate established for the field under special field rules, and the number of producing days. Each well must produce its allowable or a lesser amount established by a potential test on that well, and any lack of production from that well cannot be made up with production from another well on the same lease.

In any given day a well may produce its allowable plus an additional 10 per cent to make up loss of production. It is in violation of commission rules to produce oil ahead of the allowable schedule, however. Any overproduction, or crude produced in excess of allowable production for any month is carried over into the next month and wells must be shut in during that month until such overproduction is used up in the new month's allowable. Any underproduction existing at the end of the month cannot be made up at any time, and results in lost production.

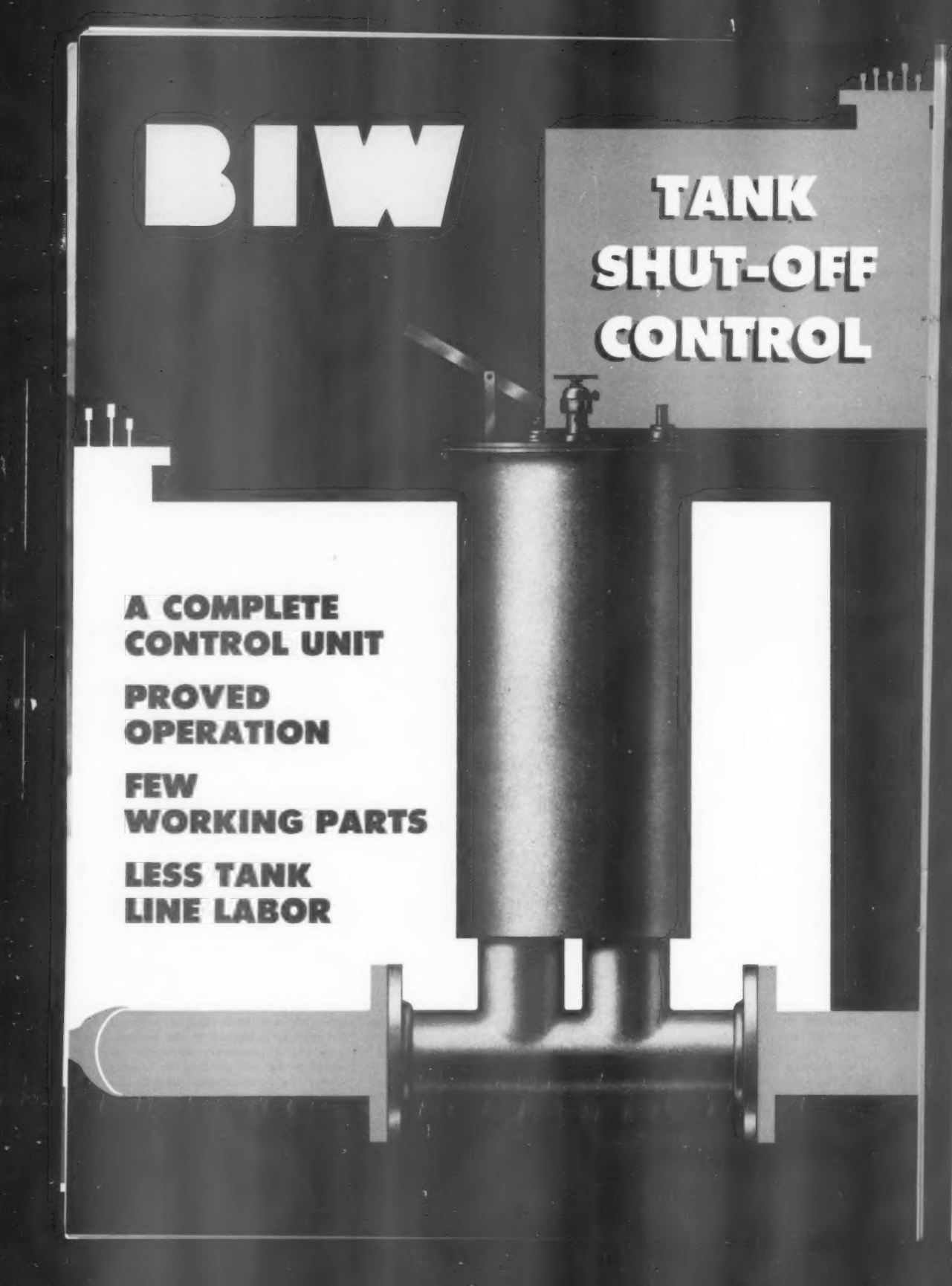
Railroad Commission hearings are held to establish state-wide allowable production and to fix state-wide rulings. They are also held to hear and obtain data for passing on exceptions to any existing state-wide rules or special field rules already in existence.

Hearings are also required to establish the existence of a new field, and to establish field rules for that field. These are established usually after at least four wells are drilled in the field.

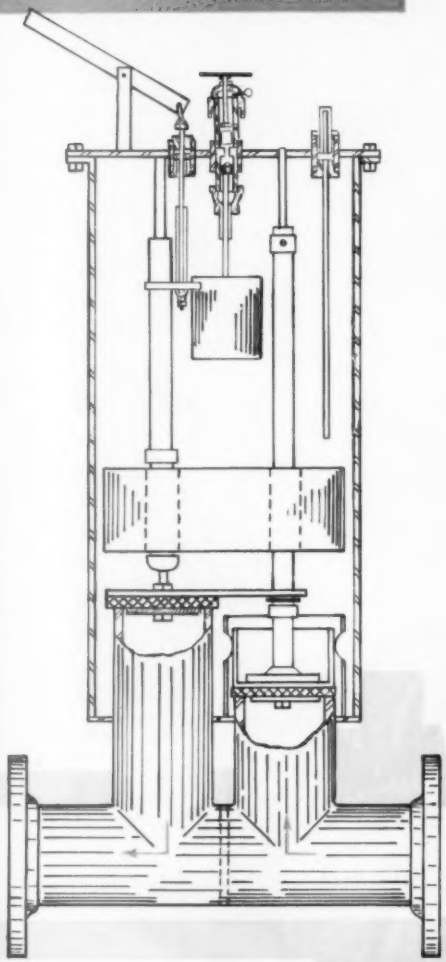
To obtain a hearing on a new field, or another type of hearing, the operator must apply by letter to the commission. At the hearing the operator appears with such data as are required to prove that the field is producing from a reservoir separate from any others. Maps, logs, and other geological data are usually presented as evidence.

After application for a hearing on a new field has been filed, a potential test may be submitted to the commission and a temporary allowable assigned to the well pending the hearing so that the operator may produce the well. Production may continue on this temporary basis prior to the hearing, and oil may be run to pipe line after securing necessary tenders.

After a hearing held for exception to the state-wide spacing rule or special


BIW
TANK
SHUT-OFF
CONTROL
A COMPLETE
CONTROL UNIT
PROVED
OPERATION
FEW
WORKING PARTS
LESS TANK
LINE LABOR

COMPLETE PACKAGED UNIT FOR IMPROVED TANK LINE PERFORMANCE



- **UNIFORM SHUT-OFF**
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- **FULL FLOW**
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- **AUTOMATIC LINE VENT**

The BIW Tank Shut-Off Control is a complete package for improved tank line performance. The Shut-Off eliminates air in the pump suction, reduces pump wear, and loss of pump capacity.

Tank discharge is stopped automatically without any attention from the pumper.

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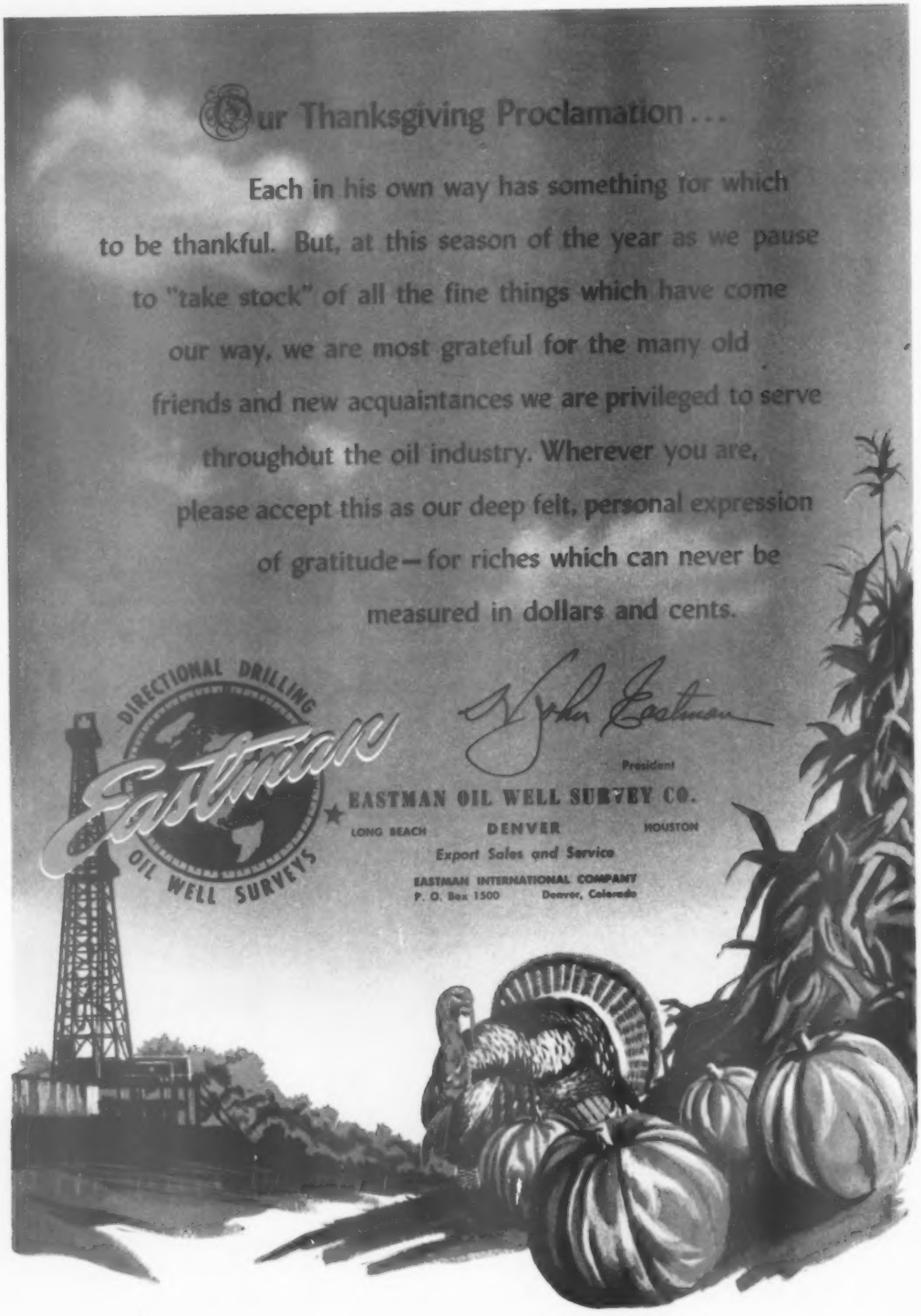
Our Thanksgiving Proclamation . . .
Each in his own way has something for which to be thankful. But, at this season of the year as we pause to "take stock" of all the fine things which have come our way, we are most grateful for the many old friends and new acquaintances we are privileged to serve throughout the oil industry. Wherever you are, please accept this as our deep felt, personal expression of gratitude—for riches which can never be measured in dollars and cents.
DIRECTIONAL DRILLING
Eastman
OIL WELL SURVEYS
John Eastman
President
EASTMAN OIL WELL SURVEY CO.
LONG BEACH DENVER HOUSTON
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P. O. Box 1500 Denver, Colorado

field rules, a full 15-day waiting period is required in which contestants may file for rehearing. Any exceptions so granted as a result of such a hearing apply for only 6 months after they are granted.

Summary of Rules of Railroad Commission

The Texas Railroad Commission has set up 54 rules under which the oil industry must operate, two of which have been rescinded or abrogated. In addition to these, however, several state-wide orders also influence oil industry throughout the State of Texas. A summary of the rules is as follows:

Rules 1-5 define "waste" of natural gas, crude oil, or petroleum, prescribe rules for confining gas to the strata in which it is found until it can be produced and utilized without waste, methods for confining the gas, and defining the commercial quantity of gas.

Rule 6 sets the gas limit of an oil well at 2,000 cu. ft. per barrel of oil. Wells that produce in excess of 2,000 to 1 are allowed to produce that quantity of gas obtained by multiplying 2,000 times the daily oil allowable.

Rules 7 and 8 cover determination of flow and regulation of production rate from gas wells, and provide for measurement of gas so produced.

Rule 9 requires that operators file Form 1, the Notice of Intention to Drill or Deepen, with the deputy supervisor of the Railroad Commission district in which the operation is to be conducted. This rule also requires that operators submit an application to plug a well and a plugging record upon completion of these operations. These are Forms 2-A and 4.

Rule 10 requires that an operator, before plugging a well, must notify offsetting lease owners of the intention to plug a well. Inability to deliver such notice, however, should not delay plugging operations.

Rule 11 requires submission of a log and well record, Form 2, within 30 days after completion of a well as a producer; however, this report must be filed with Form 3, the Potential-Test report.

Rule 12 provides for the protection of fresh-water sands which may be a source of supply of water by setting and cementing of a surface string of casing of sufficient length. Cement for such a string of casing must be circulated. Before an operator drills in an area he should contact with the State Board of Water Engineers by letter to determine location and depth of fresh-water sands.

This rule also prescribes minimum cementing and testing procedure for other strings of casing. For longer strings of casing, cement should be carried in the annular space to at least 600 ft. above the shoe and where 3,000 ft. or more casing is run, a 30-ft. cement plug should be left in the bottom of the pipe. Before drilling this plug, the casing should be tested with a pressure in psi. equal to 0.2 times the length of the string in feet, not to exceed 1,500 psi., unless otherwise ordered by the commission. If the pressure drops 10 per cent in the first 30 minutes of this test, the string must be condemned and remedial work undertaken.

"Texas R. R. Commission has set up 54 rules for oil-industry operation"

A bailing test is sometimes conducted in which fluid in the casing is bailed down to a level at or below a point midway between the top of cement and the casing show. If the fluid level shows a rise of 2 per cent of the bailed-down distance, casing should be retested and repaired if necessary.

No tubing larger than 2½-in. nominal diameter may be used in a well, and the bottom of the tubing cannot be higher than 100 ft. above the top of the producing sand or not more than 50 ft. above the top of a blank liner. Exceptions may be granted for wells producing on artificial lift.

No permit for use of any kind of bottom-hole centrifugal pump will be issued except after a hearing in Austin and notice to all offset operators.

Rule 13 provides that casing leaks resulting either from defective casing or defective cement should be repaired.

Rule 14 requires that a slush pit or sump hole be provided in rotary drilling.

Rule 15 forbids production of oil and gas from different strata through the same string of casing.

Rule 16 requires that oil, gas, and water must be sealed off subject to Rules 3 and 12, with possible exceptions being provided by the commission after hearing.

Rule 17 applies to cable-tool drilling, stating that no oil or gas-producing horizon should be drilled with water from a higher formation in the hole, or with sufficient water in the hole to prevent blowing. The well should either be allowed to blow or should be drilled in using a mud-laden fluid of at least 9.5 lb. per gallon weight. In any event the well should not be allowed to blow more than 3 days.

Rule 18 requires that a well should be filled with mud-laden fluid prior to withdrawing casing. If pressure exists between the casing strings, no casing can be removed.

Rule 19 specifies that the pump and plug method of cementing or some other commission-approved method of cementing should be used in sealing off an oil, gas, or water-producing horizon.

Rule 20 requires that fresh water either under or aboveground must be protected from produced salt water.

Rule 21 requires the use of a separator for oil and gas, and requires that all oil be measured according to pipeline rules before it leaves the lease.

Rule 22 forbids production of gas from different sands through the same string of casing in a gas well.

Rule 23 says that shooting and acidizing should be done under the direction of the deputy supervisor of the commission district in which the well is located. Forms 15 and 16 must be submitted.

Rule 24 applies to gas wells and requires measurement of the open-flow potential of such wells.

Rule 25 restrains production of gas from gas wells to 25 per cent of capacity, subject to other rules.

Rule 26 requires an oil or gas operator or transporter to notify the commission of all details concerning loss of petroleum through fires or other accidents. It requires that operators must report loss of oil from running over a tank in excess of 5 bbl.

Rule 27 specifies that pipe lines must submit periodic reports of the number of wells connected into the line and the production taken from them.

Rule 28 requires certification of a connection between a producer and a pipe line. Thirty days are granted in which to secure such certification. Permission must be obtained from the commission to disconnect this connection.

Rule 29 has been rescinded.

Rule 30 provides that a drilling record must be kept during any drilling, redrilling, or deepening operation.

Rule 31 provides that conservation agents of the Railroad Commission shall have access to all wells and well records.

Rule 32 specifies that books must be kept about details of business and its operation which will be open to inspection by agents of the commission.

Rule 33 is a notice to all persons or businesses operating in oil that they are to observe the rules set down by the commission.

Rule 34 consists of a notice that agents of the Railroad Commission will cooperate with agents of the Government of the United States.

Rule 35 charges conservation agents with enforcing the rules of the commission.

Rule 36 requires pipe-line companies to have a permit to transport oil or gas from any tract of land, and to insure

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"Commission may enter special orders increasing or decreasing spacing"

proper equipping of such line to prevent waste. This permit can be canceled upon a 10-day notice after a hearing.

Rule 37 is the state-wide spacing rule. It states that no well shall be drilled nearer than 933 ft. to another well on the same lease completed in the same horizon or that no well should be drilled nearer than 330 ft. to a lease or property line. Exceptions to this rule can be granted to prevent waste or confiscation of property. Where exceptions are desired, a duplicate Form 1 must be filed accompanied by a plat showing the proposed location and offsetting wells on a scale of 1 in. equals 1,000 ft. A 10-day notice period must be given adjacent lease owners.

The commission, on its own order, may permit drilling of wells closer than 933-330 ft. to prevent waste or confiscation of property. The commission will, in this case, order its own hearing. The commission also may enter special orders increasing or decreasing spacing.

Any well that does not follow these rules, either state wide or special, may be plugged upon the commission's order. In the event of conflict between state-wide and special rules, the special rules prevail.

Rule 38 specifies the scale of maps submitted to the commission. Plats or maps should be of a scale of 1 in. equals 1,000 ft. unless the area is less than 2 acres when a scale of 1 in. equals 40 ft. is used. Other scales may be used if permission is granted by the commission.

Rule 39 establishes regulations to prevent fires and protect against hazards. It says that unburied flow tanks must be 150 ft. from derricks, rigs, buildings, power plants, or boilers, and that tanks of 10,000 bbl. or more should be 200 ft. from like tanks. Printed "Danger, No Smoking" signs must be posted in the vicinity of tankage, and the premises around a tank, tanks, or producing well must be kept clear of high grass, weeds, and combustible trash for a radius of 100 ft.

Open earthen storage is prohibited except in emergency, although refuse may be run into a pit and burned with adequate safeguards against fire. Swabbing of a well is prohibited except for initiating production either during completion, or when a well dies. Oil tanks where there is a gas hazard shall be gastight and provided with proper vents.

No forge or open light is permitted in a derrick over a well showing oil or gas. Boilers must have steam lines for fighting fire and the boilers must be at least 100 ft. from a producing well. Oil and gas lines across public highways must be buried to a reasonable depth.

Rule 40 prohibits vacuum pumps except where the casing-head gas is utilized in a gas plant and in depleted or practically depleted fields upon permission of the commission and after notice to adjacent lease owners and operators.

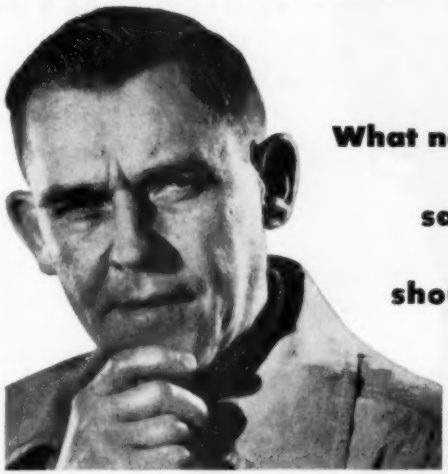
Rule 41 applies to the burning of carbon black and was abrogated by order No. 20-150, October 26, 1937.

Rule 42 provides that wells must have a sign stating ownerships, location, and size of property on which the well is located. Tanks and flares must be similarly identified. This is a statutory requirement.

Rule 43 requires that oil producers must file Form 7, the organization report.

Rule 44 provides that proper blowout-prevention equipment be installed and tested regularly as soon as surface casing is set in a well.

Rule 45 requires that all wells be



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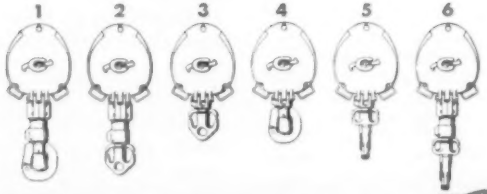

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3 Block and Short Duplex Hook Assembly
4 Block and Short Hook Assembly
5 Block and Short Triplex Hook Assembly
6 Block and Spring Triplex Hook Assembly

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Ernest O. Thompson.
William J. Murray, Jr.

Oil and Gas Division personnel, Tribune Building, Austin:

Harry M. Batis, chief supervisor.
Arthur H. Barbeck, chief engineer.
George Singletary, assistant chief engineer.
E. M. Dutton, director of production.
Rudolf Enck, assistant director of production.
George H. Buchanan, supervisor of Form 1 department.
Rose Modrall (Miss), supervisor of Rule 37 department.

Deputy supervisors, district offices:

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District 2, Refugio, **C. E. Peacock.**
District 3, Houston, **John R. Steele.**
District 4, Corpus Christi, **J. L. Jordan.**
District 5, Kilgore; Palestine; **M. P. Edmondson.**
District 6, Mt. Pleasant, **E. R. Wood.**
District 7-B, Abilene, **Fred Osborne.**
District 7-C, San Angelo, **Elmer Simpson.**
District 8, Midland, **Joe L. Greer.**
District 9, Wichita Falls, **J. T. Elliot.**
District 10, Pampa, **J. G. McClintock.**

equipped with a bradenhead and that when pressure is found to exist between any two strings of casing, the commission should be notified. No cement may be pumped between any two strings of pipe from the surface except after permission from the commission. Proper testing procedure in the event a leak is found is prescribed.

Rule 46 requires that any pit into which wells are cleaned be 40 ft. from the derrick floor and 150 ft. from any fire hazard.

Rule 47 provides that an oil and gas separator of proper capacity be installed and that tanks of large enough capacity to hold allowable production and constructed to permit proper gaging must be used.

Rule 48 requires wells to be equipped with adequate chokes or flow beans to properly regulate flow of oil or gas.

Rule 49 provides that no boiler or electric-generating plant be nearer than 150 ft. to an oil tank or producing well, and that debris and rubbish that constitutes a fire hazard must be at least 150 ft. from wells, tanks, or a pump station. All waste shall be burned or disposed of to avoid creating a fire hazard.

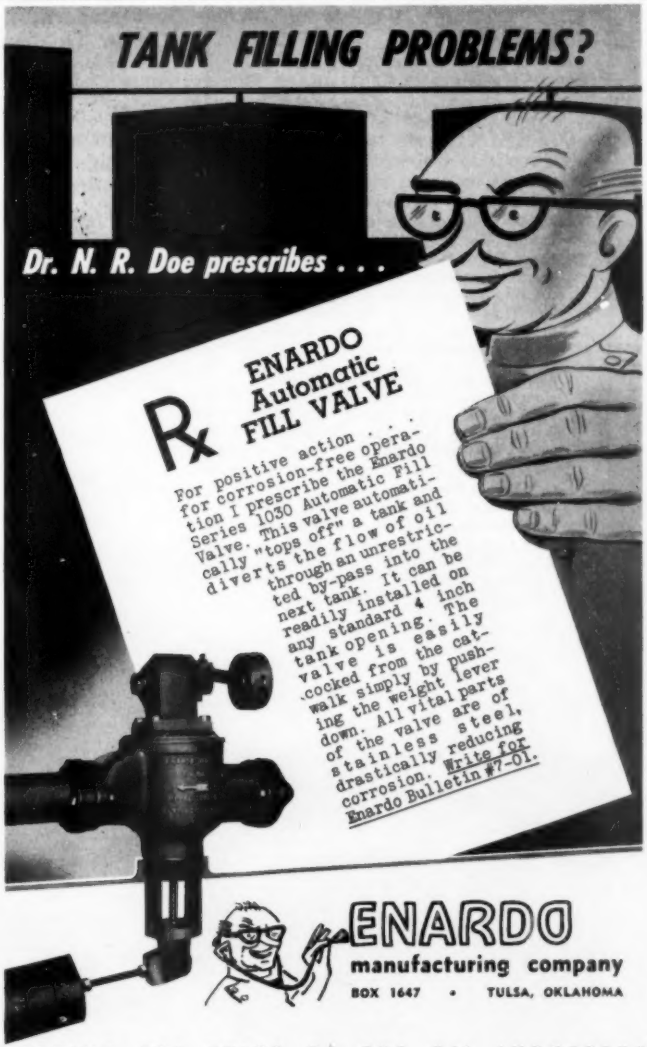
Rule 50 provides that dikes or fire walls are not required except within the corporate limits of a city, town, or village, or within 500 ft. of a highway or inhabited dwelling, or within 1,000 ft. of a school or church. Dikes may be prescribed by the commission if tankage is deemed a hazard.

Rule 51 provides that when coming out of the hole with drill pipe, drilling fluid shall have been circulated until it is equalized and a fillup line turned into casing to insure a full load of fluid on the bottom of the hole.

Rule 52 states that all wells producing 2 per cent or more salt water must be reported to the commission.

Rule 53 authorizes an agent of the commission to make a gas-oil ratio or bottom-hole-pressure test on any well at any time and directs the owner of the well to do all things required of him by the agent for conducting such a test.

Rule 54 requires that on any well where a directional survey has been required by the commission, a copy of such survey must be sent to the commission in Austin by the surveying company by registered mail. Permit to drill a directionally deviated hole (other than sidetracking or straightening) must be given an operator before a permanent allowable will be assigned a well. Request for permit to drill a directionally deviated hole must include all available data about reasons and plans for drilling such a hole.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Recovery History Is Being Made Near FALFURRIAS, Texas!

TRANS-TEX TRANSMISSION COMPANY Said . . .

"Let's have the complete BS&B Condensate Recovery System"

Oil and gas history is being made a few miles south of Falfurrias, Texas, just a rattle-snake's-crawl from Highway 281. Here, serious, oil-minded visitors are coming to see the BS&B Condensate Recovery System that's sending recovery and profits up for the Trans-Tex Transmission Company.

Early last year Trans-Tex Transmission Company was one of the first to install a BS&B Glycol Injection System. They found, as others have since, that the favorable recovery made possible by this low temperature unit left no doubt of its capacity to produce profitably. To get the maximum benefit from this recovery they found an even greater need to make the oil stable and eliminate shrinkage after the condensate left the separator for stock tank storage.

The answer was the BS&B Stabilizer. So Trans-Tex said: "Let's have it all . . . the Glycol Injection Unit and the Stabilizer."

There is one very cold area out here on the Texas sands. It's the point at which the BS&B Glycol Injection Unit is sending the temperature **way** down . . . sending **recovery up.** This low temperature is practical because glycol injection prevents the formation of hydrates . . . the bug-a-boo of gas processing. With no hydrates to bother, the system can include a regenerative heat exchanger which cools the gas to temperatures well below the hydrate point, ahead of the expansion valve. With a given pressure drop across the expansion valve, lower separator temperatures are obtained than are possible with conventional units, or even the most efficient low temperature separation units . . . because in LTS units, temperatures must be maintained above the hydrate point up to the expansion valve.

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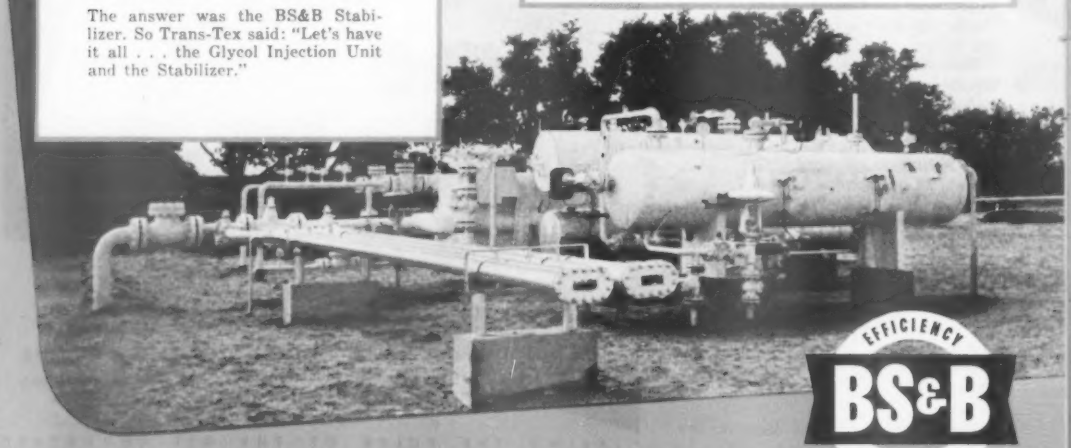

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Glycol Injection System*
OF LOW TEMPERATURE SEPARATION With STABILIZER**

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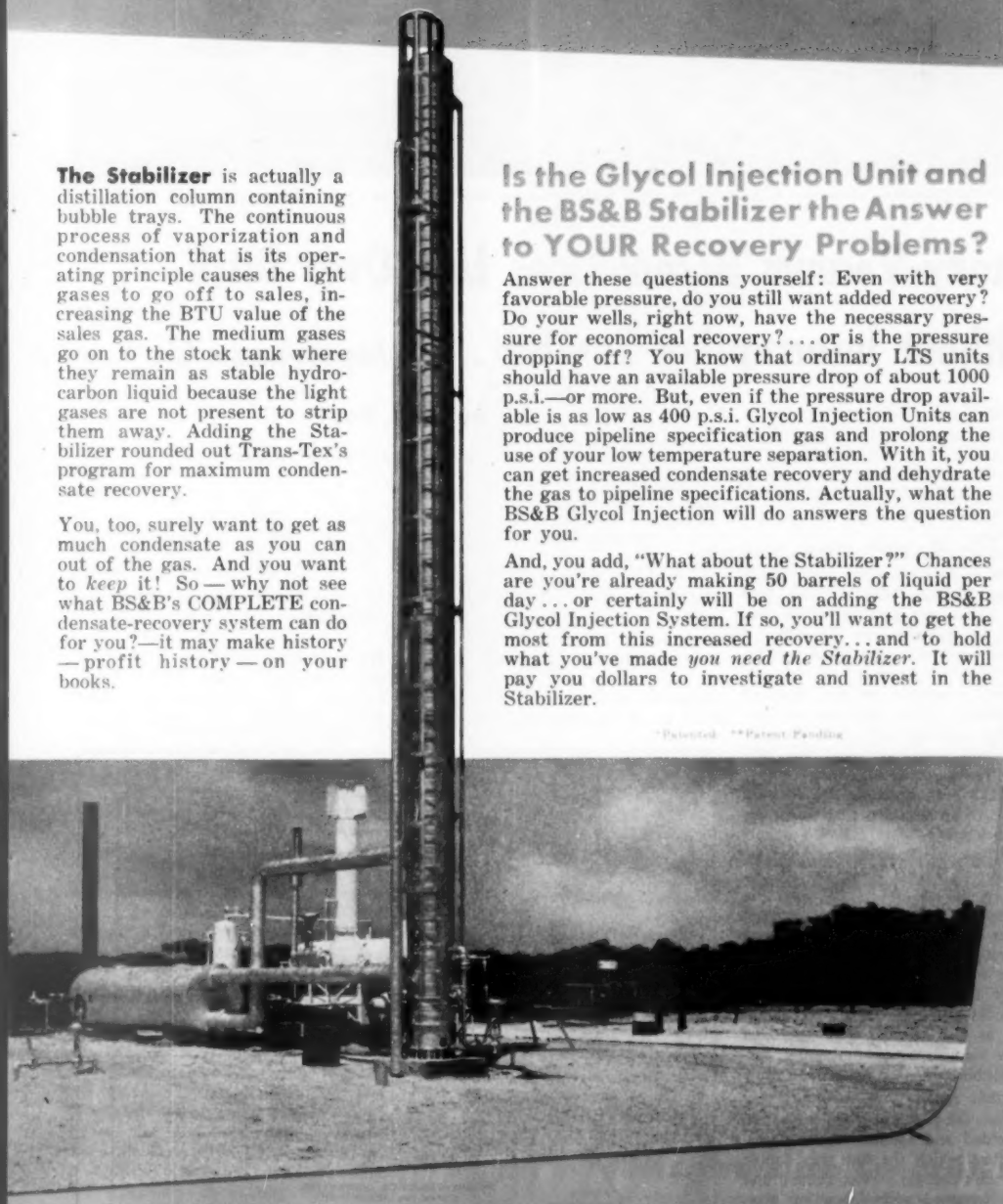
You, too, surely want to get as much condensate as you can out of the gas. And you want to *keep* it! So — why not see what BS&B's COMPLETE condensate-recovery system can do for you?—it may make history — profit history — on your books.



Is the Glycol Injection Unit and the BS&B Stabilizer the Answer to YOUR Recovery Problems?

Answer these questions yourself: Even with very favorable pressure, do you still want added recovery? Do your wells, right now, have the necessary pressure for economical recovery? . . . or is the pressure dropping off? You know that ordinary LTS units should have an available pressure drop of about 1000 p.s.i.—or more. But, even if the pressure drop available is as low as 400 p.s.i. Glycol Injection Units can produce pipeline specification gas and prolong the use of your low temperature separation. With it, you can get increased condensate recovery and dehydrate the gas to pipeline specifications. Actually, what the BS&B Glycol Injection will do answers the question for you.

And, you add, "What about the Stabilizer?" Chances are you're already making 50 barrels of liquid per day . . . or certainly will be on adding the BS&B Glycol Injection System. If so, you'll want to get the most from this increased recovery. . . and to hold what you've made *you need the Stabilizer.* It will pay you dollars to investigate and invest in the Stabilizer.

*Patented **Patent Pending

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Oil & Gas Equipment Division Department 1-A11B

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RECONDITIONING operations on products pipe line were carried out with full flow of liquid, under pressures up to 300 psi.

Socony-Vacuum Reconditions Line Over Ditch Without Interrupting Service . . . Augusta-Kansas City, Kans.

by J. A. Rupf*

DURING the winter and spring of 1951 and 1952, the Socony-Vacuum Oil Co., Inc., reconditioned 175 miles of 6-in. products pipe line in service extending from the refinery at Augusta, Kans., via Topeka to Kansas City, Kans.

This section of line was constructed in 1936 of new seamless pipe, which was gas (Linde) welded, and spot coated. This spot coating, which was applied to approximately 34 miles of line, consisted of hand-applied wax together with a wrapper of wax-impregnated asbestos. At the time of construction, special attention was given to the welding, both as to the procedure and inspection, and this precaution has paid off well since to date there have been no leaks due to weld failure. All stream and river crossings and block valves were installed underground, the line itself having an average cover of 30 to 36 in.

Leak repair . . . As leaks occurred from time to time in the Augusta-Kansas City section of line, they were repaired by the company's maintenance crew. Usually the pipe was uncovered on both sides of the leak and reconditioned as far as deep pits appeared with a view toward eliminating further trouble from the immediate area.

In this repair and reconditioning operation, the pipe was cleaned and the pits welded and slabbed where necessary, after which the line was double coated with coal-tar service cement and double wrapped with fabric or glass and tar-saturated asbestos felt. This method of maintenance was continued until late in 1951 at which time, due to a marked increase in the number of leaks, it became evident that the sectional maintenance work would have to be substantially increased or a complete line-reconditioning project undertaken.

SUMMARY OF RECONDITIONING PROGRESS

Spread—	1	2	3	4	Average
Mileage	75	33	42	25	.....
Starting date	Nov. 21	Nov. 14	Nov. 21	Nov. 19	.....
Date coating completed	Feb. 18	Jan. 28	Feb. 23	Feb. 19	.....
Days	90	76	95	93	88½
Feet per day	4,400	2,400	2,340	1,420	2,640

Reconditioning plans . . . After considerable study, it was decided that a complete line-reconditioning project was justified for the Augusta-Kansas

Pipe line which was reconditioned extends from Augusta to Kansas City, Kans.

*Chief engineer, Central Pipe Lines Division, Socony-Vacuum Oil Co., Inc., Wichita, Kans.

City section of line. In the planning of the project, there were several items which had to be considered, such as minimum down time, availability of line pipe, safety features, and the need for incorporating certain line improvements. The principal improvements decided upon were (1) the construction of overhead spans to replace underground creek crossings, (2) the raising of all block valves aboveground, and (3) the rerouting of certain sections of the line around housing areas or other obstructions.

Because of the necessity for keeping down time to a minimum, it was agreed that the reconditioning should be done over the ditch with the line in service. To comply with insurance requirements and safety practices, it was necessary to weld straps 2½ by 6 in. in size on the top and bottom of each weld, and to reduce line pressures during welding operations to 300 psi. or less. Since during the 16 years the line had been in operation, no leaks had occurred in any cased railroad or road crossing, these cased crossings were not reconditioned.

Because of wide variations in topography, congested areas, etc., the 175 miles of line was divided into four sections of unequal length, i.e., No. 1—64 miles, No. 2—44 miles, No. 3—42 miles, and No. 4—25 miles, with one spread being used for each section. The order of work set up for the various reconditioning operations was as follows: Right-of-way, strip, weld on top straps, raise, weld on bottom straps, two machine cleaning with second machine applying cut-back primer, inspection and marking of pipe for repair, welding pits and slabbing, cleaning and priming, coating and wrapping, inspection of coating, lowering in, backfilling, and cleaning up right-of-way.

All welding on the line was to be done with fluid flow in the line, and as previously mentioned, with line pressures of 300 psi. or less. The work of each spread so far as drainups and tieins for spans, valve work, and rerouting arrangements for shutdowns, etc., was to be handled through the dispatcher and coordinated by him.

The contractor started work on all spreads around the middle of November, shortly after which it was found necessary to increase the distance between various work operations considerably over that employed on new construction. For example, the amount of slabbing and other welding operations often varied widely from day to day, which meant that careful planning was necessary if coating operations were not to be held up.

Equipment used . . . The ditching ma-

. . . who's got the button?

you have!

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PUMPING ENGINE HOUSE pictured here is a Butler Packaged Building, one of 18 used by an oil company at Lorraine, Kans.

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chines used on the job had specially constructed buckets with rooter teeth removed so as not to injure the pipe. Probably because these teeth had been removed, considerably more ditching equipment was needed for the job than originally estimated. It was found the machines had trouble working in wet soil due to the fact that the buckets would not clean properly; furthermore, considerable difficulty was experienced with frozen soil.

A good example of the amount of equipment required for ditching was to be found in Spread 1 where in order to maintain a daily progress of 6,000 to 7,000 ft., five backhoes and three ditching machines were used.

The reinforcing straps which were placed over the original line welds were welded on all sides, thereby providing a sloping edge which allowed the knives on the cleaning machines to pass over these straps without difficulty. Following careful hand cleaning, one of these straps was welded to the top of the pipe immediately following stripping operations, which made it necessary for the ditch to be wide enough that the welding could be done without any additional excavation. After the top strap had been applied, the line was raised, then placed on skids and the bottom strap applied.

A minimum of three machine cleanings were employed in the reconditioning work, and special machines with two cleaning heads revolving in opposite directions were used. The first machine was equipped only with knives, whereas the second and third machines had knives, brushes, and a priming head. No difficulty was experienced in the cleaning of the bare pipe; furthermore, the original spot coating of wax and wrapper was easily removed, although it was found necessary to wash these sections with approved solvent.

The removal of the coal-tar service cement, fabric, and wrapper, which had been applied on maintenance work, presented quite a problem due to the fact that the service cement would tend to "ball up" under the cleaning knives, thereby preventing proper contact with the pipe surface. As a result of this difficulty, a number of experiments were tried before it was determined that a specially constructed ripping shoe pulled by a tractor preceded by flame heaters gave a satisfactory, although not a perfect, answer to the problem.

Coating . . . The application of a cutback primer which followed the second cleaning operation was a big help to the welding inspector in that it made it much easier to find and mark pipe pits for repair. This prepriming also

helped to secure a better final priming job in that the primer covered any rough pipe surface and protected pits better than where prepriming was not employed.

The coating on this reconditioning job consisted of a 3/32-in. application of plasticized coal-tar enamel together with both a glass and felt wrapper. The coating operations at all times kept on schedule, and as a general rule very little trouble was encountered in application.

On Spread 4, however, where the rate of product flow was approximately the same as the rate at which the coating was being applied, the pipe surface became so warm that the trapped solvent in the primer vaporized thereby causing bubbles to form in the enamel to a point where the number of coating holidays became excessive.

This was particularly true where the pipe surface was uneven such as is the case with welding straps, halfsoling, etc. It was soon found that by slowing down the coating operations so as to keep the pipe properly cool, the trouble could be eliminated.

Backfilling and cleanup were essentially the same as on a new construction; however, on this particular project the progress on these operations was quite slow due to the fact that much of the work had to be done while the ground was either frozen or muddy from early spring rains. It was noted that the ditch settled more than is generally the case in new construction due principally to the fact that the dirt normally displaced by the pipe was not available for the backfill.

Very shortly after the work was under way, it was deemed advisable to eliminate all drainups and tieins since it was found practically impossible to coordinate the work on all four spreads so that the rate of progress would not be unduly slowed down. It was also quite essential that the down time on the line itself be held to an absolute minimum, consequently the drainup and tiein work was done by small crews at the close of the project.

Cost favorable . . . In summarizing the experience gained from this project, it was found that the cost of reconditioning the line under pressure was less than that of laying new sections and then cutting out the old sections, reconditioning the pipe, and relaying it elsewhere. The down time was also held at a minimum under this method of operation and such loss in throughput as occurred was due essentially to the fact that the pumping rate was reduced during working hours to the point necessary to maintain a maximum line pressure of 300 psi.

BAIRD - - - TOOLS

CLEANOUT TAP AND DIE

For — cleaning up smashed or dirty threads on —

- ★ Slush Pumps
- ★ Piston rods
- ★ Valve cover and cylinder head studs
- ★ Extension rods —
- ★ Sucker rods —
- ★ Tubing on line pipe
- ★ Blowout preventer studs

Any diameter — any number of threads per inch.

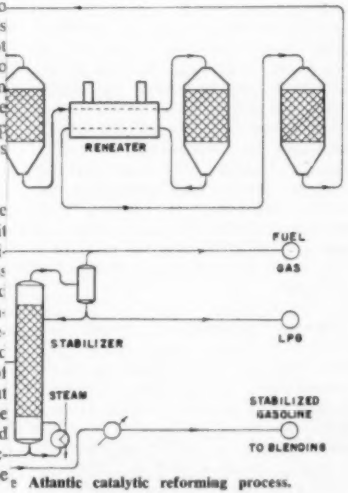
***Always available at your supply store**

Baird Manufacturing Co.

Box 380 — Tulsa

returns to the feed preheat exchange and then through water cooling to the high-pressure gas separator. Gas from the high-pressure separator, which is 90 per cent pure hydrogen, is recycled back to the reaction system by the compressor. A complete spare compressor is provided to assure continuous hydrogen circulation.

A small flow of make gas from the separator is withdrawn to the refinery



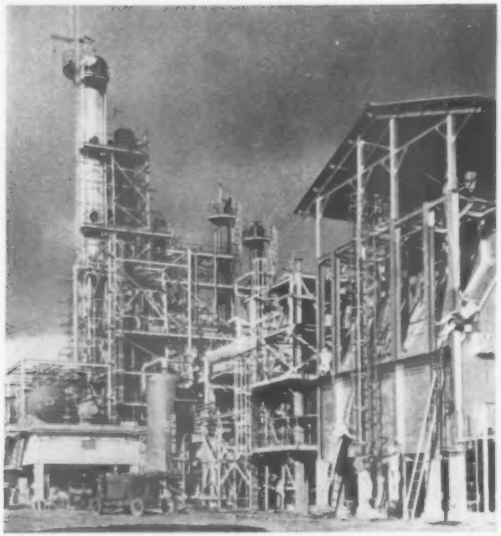
Atlantic catalytic reforming process.

release additional hydrogen from stabilizer feed and acts as a surge drum for the stabilizer. From this drum the naphtha flows to a conventional stabilizer for vapor-pressure control of the reformate. The stabilizer bottoms flow directly to gasoline blending without treating. When the stabilizer is operated to produce a low-vapor-pressure reformate, the excess butane and propane are taken overhead to L.P.G. storage.

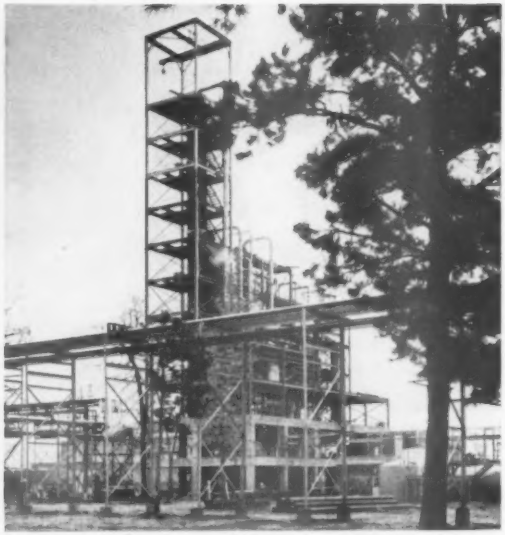
Simple process . . . The simplicity of the process is evident from the above description of flow. There are no pretreatment facilities or product-treating requirements. Although the feed is saturated with water, no facilities are required to remove the water since the Atlantic catalyst is not affected by moisture. Provisions have been included for regeneration of the catalyst, in place, although it is not anticipated that the catalyst will require regeneration for many months. Regeneration is carried out at low pressure and 900°-1,000° F. using a mixture of air and steam. Connections have been installed for admitting air and steam before the first heater and for withdrawing flue gas to the vent line.

The plant went on stream 6½ months after signing the construction contract. Materials of construction are carbon steel below 500° F. and 4-6

(Continued on page 127)



Texas Eastman cracks propane in furnace at right and separates propylene and ethylene so formed in columns in background.



Crude iso and normal butraldehyde mixture coming from catalytic reactors is separated and refined in this distillation building.

PETROCHEM REPORT:

Texas Eastman Co., Longview, Texas

This Eastman Kodak division provides parent company with an internal supply of raw materials, manufactured from natural gas and propane

by George Weber
Refining Editor

TEXAS EASTMAN CO. is one of the newcomers to the field of petroleum-chemicals manufacture. At its plant completed this year at Longview, Tex., natural gas and propane are converted to produce four basic chemicals which in turn are used in the manufacture of plastics, synthetic fibers, films, coatings, solvents, and numerous chemical intermediates.

This division of Eastman Kodak Co. fills a key role in providing Eastman's growing chemical operations with an internal supply of raw materials. Most of the production at Longview is absorbed by the affiliated Tennessee Eastman Co. which operates one of Tennessee's largest single industrial units at Kingsport.

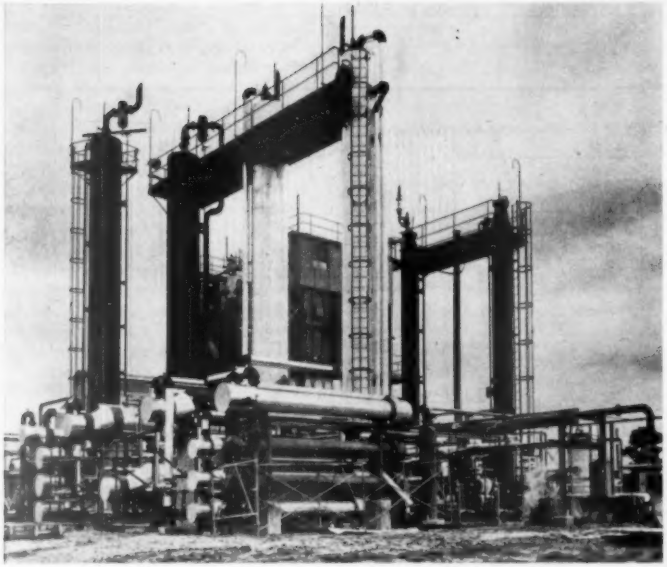
Expansion planned . . . Texas Eastman's plant location in western Harrison County, East Texas, combines the advantages of proximity to fuel and raw materials, adequate processing and cooling-water supplies, good rail and highway transport, and an excellent labor climate. Although engaged primarily in furnishing basic chemicals, Longview appears slated for future expansion into some finished-product manufacture. To the millions already expended for butyraldehyde and ethyl alcohol facilities, the company has received certificates authorizing accelerated amortization on planned facilities for a $7,000,000 polyethylene unit and a $3,800,000 plant to produce a new synthetic hard wax from ethylene polymers.

Aldehyde production . . . About 10,000,000 cu. ft. of natural gas for fuel and conversion to producer gas is delivered daily to the plant through a 50-mile 8-in. pipe line from Trawick field in Nacogdoches County. The plant's daily propane requirements, averaging about 85,000 gal., are supplied under contract from Humble Oil & Refining Co.'s natural-gasoline plant at London, in the East Texas field.

These raw-petroleum fractions are charged to two primary processing units. Natural gas is reacted at high temperatures with air and steam in the synthesis gas units to form carbon monoxide and hydrogen. The propane thermal cracker converts propane to propylene and ethylene.

Following separation from ethylene and uncracked propane, the propylene stream is charged to a catalytic reaction unit where in a variation of the Oxo process, one mol of propylene combines with one mol each of carbon monoxide and hydrogen to form a mixture of iso and normal butyraldehydes. The unit includes fractionation facilities for splitting the two aldehydes.

No details have yet been made public concerning the design of this Eastman-developed operation. In an adjacent unit, Texas Eastman both manufactures fresh catalyst and continuously reacti-



Natural gas, carbon dioxide, and steam react at high temperatures in these units at Texas Eastman to form synthesis gas.

vates spent catalyst used in the process.

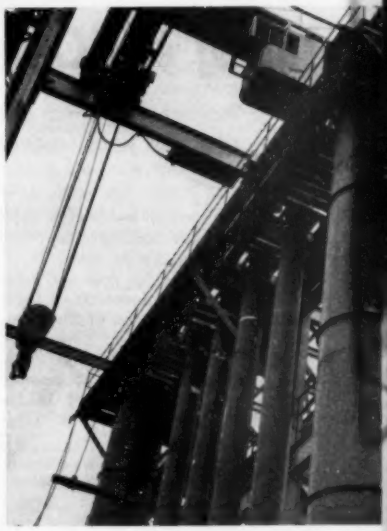
Alcohol production . . . A further operation based on butyraldehyde is carried out at Longview. In this unit, n-butyraldehyde is converted catalytically to 2-ethylhexyl alcohol. A new unit is now under construction for converting isobutyraldehyde to isobutyl alcohol. Most of the remaining n-butyraldehyde is shipped as such to Kingsport. Where an outside market exists, shipments are made direct from Longview. Texas Eastman remains a producer only, and all outside chamical sales are handled by Tennessee Eastman Co. at Kingsport.

At present, all ethylene produced in the propane cracker is charged to the alcohol plant where it is combined with water to form ethyl alcohol. Plans are now under way to build polyethylene facilities at Longview, to help meet the phenomenal potential demand for that versatile plastic. In addition, production of a hard wax form of polyethylene is proposed. To date Eastman is saying little about this new product, but it is expected to prove competitive with some natural waxes such as carnauba wax. In this respect, the project will contribute an added source of important material which has long been available only in limited supply from foreign sources.

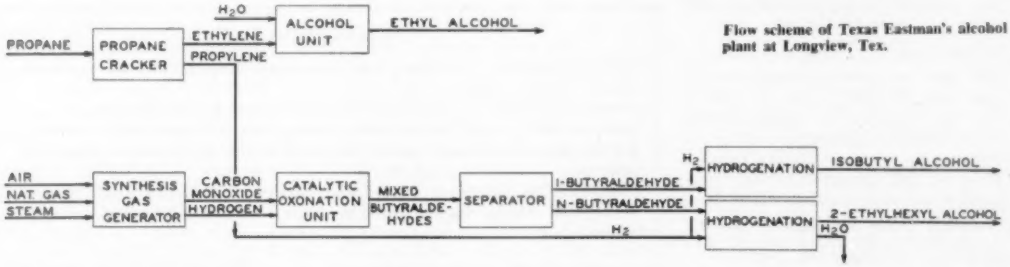
Products to Kingsport . . . A large portion of the four basic chemicals produced at Longview move by tank car to Kingsport, where they are converted into a line of acids, aldehydes, anhydrides, and other intermediate chemicals. Some of these, such as acetic and butyric acids and anhydrides are transferred as feed stocks to Kingport's cellulose esters manufacturing department. Finished esters from that department, dissolved in acetone and other common solvents and plasticizers, are in turn fashioned into finished fibers, films, plastics, and coatings in the Tenite, Koda, and Teca divisions of the complex Kingsport plant.

21 Industrial Chemicals

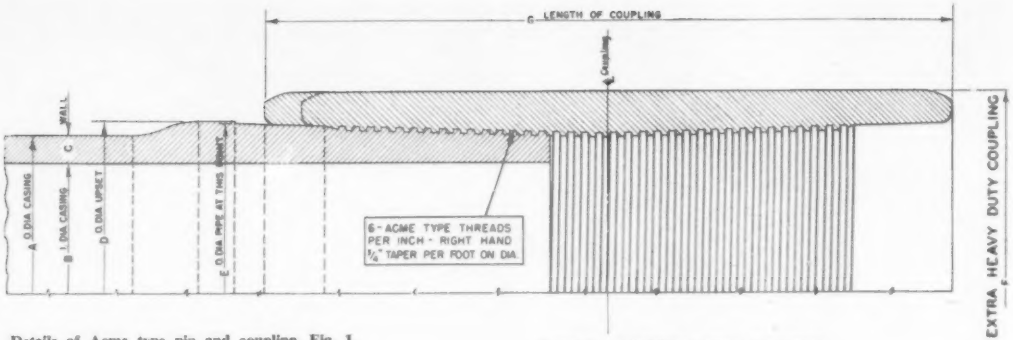
In addition to the above finished products, natural gas and propane originally charged to Longview's operation enter into the manufacture of a total of 21 industrial chemicals, including: acetaldehyde, acetanalide, acetic acid, n-butyl acetate, n-butyraldehyde, n-butyric acid, n-butyric anhydride, cellulose acetate, cellulose acetate butyrate, crotonaldehyde, dibutyl phthalate, diethyl phthalate, di-(2 ethylhexyl) phthalate, diisobutyl phthalate, ethyl acetate, 2-ethylhexyl alcohol, isobutyl acetate, isobutyl alcohol, isobutyraldehyde, isopropyl acetate, and triethyl phosphate.



Heart of Texas Eastman's process is the high-pressure catalytic reactors in which normal and iso butraldehyde are formed.



Flow scheme of Texas Eastman's alcohol plant at Longview, Tex.


G LENGTH OF COUPLING
Coupling
WALL
C
A O.DIA CASING
B I.DIA CASING
D O.DIA UPSET
E O.DIA PIPE AT THIS POINT
6 - ACME TYPE THREADS PER INCH - RIGHT HAND 1/16" TAPER PER FOOT ON DIA
F O. DIA. EXTRA HEAVY DUTY COUPLING

Details of Acme type pin and coupling. Fig. 1.

DRILL CASING AND TUBING

DIMENSIONAL DATA

SIZE	WEIGHT	GRADE	A	B	C	D	E	F	G
2 7/8"	6.5	J or N	2.875	2.441	.271	3.156	–	3.668	6.000
3 1/2"	9.3	J or N	3.500	2.992	.254	3.813	–	4.500	6.625
4 1/2"	9.4	NE8740	4.500	4.090	.205	4.813	–	5.563	7.125
4 1/2"	10.8	NE8740	4.500	4.026	.237	4.813	–	5.563	7.125
4 1/2"	12.75	J – 55	4.500	3.958	.271	4.813	–	5.563	7.125
5 1/2"	15.3	NE8740	5.500	4.950	.275	5.750	5.700	6.500	8.000
5 1/2"	17.0	J – 55	5.500	4.892	.304	5.750	5.700	6.500	8.000

by William F. Bates*

Report on Use of

Tubing and Casing as Drill Pipe

Advantages cited are low weights per foot, extension of the depth range of given hoist, reduction of pump horsepower for the same volume of mud.

DRILL casing and drill tubing have proved practical and useful when used as drill pipe, and have in many instances reduced drilling costs.

The low weights per foot and relatively large internal diameters of these tubes allow the extension of the depth range of a given hoist, and, particularly in conjunction with jet bits, allow either reductions in pump horsepower for the same volume of mud, or increased volume of mud for the same horsepower.

With experience and proper equipment, it is possible to handle drill tubing and make round trips at speeds which approach those attainable with drill pipe. With adequate care and under proper circumstances, maintenance costs for drill tubing can be kept equal or below the costs for drill pipe.

Use of Drill Casing at Field A, San Joaquin Valley

The technique of using drill casing as drill pipe was first developed in the latter part of 1940 during the drilling of Field A in the San Joaquin Valley of California. Combination strings of casing were being set in this field at 8,200 ft. and cemented through perforations at approximately 8,000 ft.

For the first drill-casing job 4½-in. o.d., 12.75-lb., J-55 seamless pipe was selected and an 8½-in. hole was drilled. Other specifications of this pipe were as follows: wall thickness, 0.271 in.; coupling, 5.56 in. o.d.; six Acme threads per inch with ¾-in. taper per foot, external upset internal flush. This was a standard A.P.I. tube except for the Acme threading. Fig. 1 shows a drawing of this joint with its dimensions.

The first well was completed in 29 days, which compared favorably with previous 8½-in. holes drilled with drill pipe. On the first well some difficulty was experienced with tongs crushing the pipe when breaking joints during round trips. This was eliminated by increasing the standard 4-in. tong jaw to 10 in. Round-trip times at first were slower than for drill pipe, but as experience was gained times become comparable.

This was due in part to the development of steam-driven power tongs which eliminated the spinning rope as well as cathead tonging and therefore speeded up the makeup time when running in the hole. It was found that this joint could be broken with the rotary table when coming out of the hole.

Because of favorable experience on the first well a full program of field development using drill casing was inaugurated, originally with 4½-in. and later with 5½-in. A total of 17 wells were drilled with 4½-in. and 28 wells were drilled with 5½-in. drill casing.

DEFINITIONS

DRILL CASING . . . Tubes that are used for drilling and then are cemented in the well as casing.

DRILL TUBING . . . (1) Tubes that can be used for drilling-in operations and can later be used as production tubing, and (2) tubes used exclusively for drilling purposes and moved from well to well in the same manner as drill pipe.

(NOTE: Upon retirement from drilling service all drill tubing can be converted into casing, liner, or line-pipe stock depending on its size and condition.)

*General drilling superintendent, Shell Oil Co. Presented at A.A.O.D.C. meeting, Oklahoma City, September 29-30, 1952.

This program resulted in a total of 45 wells, or about 370,000 ft. of hole being drilled with drill casing.

The 5½-in. size was preferred because it allowed greater mud-circulating rates while drilling and its larger diameter was desirable for production operations. Twistoffs or other common drill-pipe failures were infrequent for both the 4½ or 5½-in. drill casing.

Tables 1 and 2 show time and cost comparisons for wells drilled with 4½-in. drill pipe and 5½-in. drill casing. The savings realized through the use of drill casing averaged $3,416 per well and the average gross cost of each well was $44,000. This represents a saving of 7.75 per cent.

As can be seen in Table 2, most of the savings were realized by a reduction in drilling time, which is attributed to increased penetration rates with increased circulation through the larger pipe and to the elimination of the costs of drill-pipe maintenance.

Use of 5½-in. drill casing has since been considered a proven practice wherever that size casing is acceptable, however, special economical studies of each area are warranted if abrasion of pipe is severe and/or the number of round trips required to drill the hole is excessive.

In Field B in the coastal area a test was made using 7-in. drill casing with the "Speed Tight" thread design. Two wells were drilled, but it was found that the thin section of the pin crushed when a stand was racked in the derrick. Round trips were slow and there was a general disadvantage in handling the larger size pipe. It is conceivable that in some instances 7-in. drill casing would be economical, but in this field the heavy-walled, 7-in. pipe required for casing caused excessive hoisting loads and no real effort was made to develop 7-in. drill casing.

Use of 3½-In. Tubing for Exploratory Drilling

The development of drill tubing resulted from an investigation of methods and techniques for reducing costs of exploratory wells. A study of optimum hole and pipe sizes led to the proposal to drill slim holes (6¾-in.) with 3½-in. pipe. Since light, portable hoisting equipment was not available for handling conventional 13.3-lb., 3½-in. drill pipe to the desired depths, 3½-in., 9.3-lb. upset J-55 A.P.I. tubing with Acme-type threads was selected for this program.

This pipe, used in conjunction with portable drilling units, was used to drill some 13 exploratory and semi-exploratory wells as described in a previous paper.[1] These wells ranged in depth from 1,827 to 10,319 ft. As drilling rates were comparable to those obtained with larger rigs using heavier drill pipe, and because the daily operating costs of the light rig were less, the total well costs were reduced. The savings ranged from $2.00 to $6.00 per foot.

The techniques employed included use of air power tongs for making up joints and special 10-in. jaws for breaking out joints. Couplings made from N-80 grade steel were used to lessen coupling thread wear. Normal bits, bit weights, table speeds, and rates of circulation were used during the drilling of these wells. Maintenance of the tubing itself was again found to be nominal in comparison with drill pipe.

TABLE 1—TOTAL TIME REQUIRED TO DRILL 8,200-FFT. WELLS—FIELD A—YEAR DRILLED—1942

Well	Type pipe	Total time days-hours
1	4½-in. Hydril drill pipe	23- 7
2	4½-in. Hydril drill pipe	23-12
*3	4½-in. Hydril drill pipe	24- 7
*4	4½-in. Hydril drill ppie	24-21
*5	4½-in. Hydril drill pipe	25-16
Average		24- 8
Average lost time (hours)		13
6	5½-in. Acme-threaded drill casing	21-20
7	5½-in. Acme-threaded drill casing	22-14
8	5½-in. Acme-threaded drill casing	20- 8
9	5½-in. Acme-threaded drill casing	19-15
10	5½-in. Acme-threaded drill casing	24-21
11	5½-in. Acme-threaded drill casing	19- 3
Average		21-10
Average lost time (hours)		17

Average difference in total time—2 days, 22 hours more for drill pipe.

*Time for unusual coring has not been included.

Use of 4½ and 5½-In. Drill Tubing

Success achieved in the first two phases of this work led to the conclusion that exploitation wells could also be drilled more economically employing the same technique of lightweight equipment handling lightweight pipe. The first drill tubing purchased for this purpose consisted of 12,000 ft. of 4½-in. o.d., 9.4-lb., 0.205 wall, NE 8740 steel tubes which were externally upset and used the same Acme-thread collars previously used. Reference 1 describes the drilling of nine 4,500-6,000-ft. wells with this tubing. These wells were drilled with a small rig (96-ft. mast and 270-hp. diesel power plant on the hoist) at rates comparable to nearby wells using 700 hp. and pulling 93-ft. stands of conventional 4½-in. drill pipe.

Again savings were made through the use of the drill tubing because of the lower rigging up, tearing out, and daily operating costs of a small rig.

Development of Hard-Faced Collars

Subsequent to the drilling of the nine shallow wells with the 4½-in. drill tubing, a deeper well in the same field (Field B, Well 6) was selected for drilling with the same drill tubing. A second string had been purchased having slightly greater wall thickness, 10.8-lb. (0.237), and this string was used on the deep well. The lighter-weight pipe was preferred, but the supplier insisted on a heavier-walled tube as it simplified mill upsetting.

Although the tubing was satisfactory in other respects, severe external collar wear was experienced on this well and as a result 468 collars were used in drilling from 1,033 to 10,506 ft. Estimated drill-tubing maintenance and de-

TABLE 2
Saving Per Well Incurred Through Use of Drill Casing

Expense incurred using drill pipe and not applicable to wells drilled with drill casing:	
8,200 ft. of 5½-in., 17-lb., J-55 casing at $0.9972 per ft.	$8,177
Additional time of operations—3 days, 2 hours at $26.25 per hour	1,940
Drill-pipe maintenance and depreciation at $90 per day or $3.75 per hour	2,190
Transportation of drill pipe	70
Extra labor for running casing	35
Total	$12,412
Expense incurred using drill casing and not applicable to wells drilled with drill pipe:	
8,200 ft. of 5½-in., 17-lb., Acme-threaded drill casing at $1.06 per ft.	$8,692
Extra cost of 35 casing protectors at $4.12 each	144
Drill-casing maintenance:	
12 joints to be straightened or recut at $4.00 each (average)	48
21 couplings for replacement of thin or galled collars at $3.90 each	82
Transportation and handling	30
Total	$8,996
Net saving per well through use of drill casing	$3,416

TABLE 3

Coastal Area, Field B, Well 6, 4½-In. Drill-Tubing Maintenance and Depreciation

(Interval drilled with 4½-in. drill tubing—1,033-10,506, or 9,473 ft.)

Maintenance cost:	
468 couplings at $3.75 each	$1,760
Straighten 115 joints	230
Rig-time costs	1,290
(Change 468 couplings at 3 minute per coupling with rig time at $55 per hour)	
Miscellaneous	90
Total	$3,370
Maintenance cost per foot of hole drilled	$0.356
Depreciation cost:	
Assuming 12,000 ft. of 4½-in. drill tubing can drill 90,000 ft. of hole and costs $2.16 per foot and has salvage value of 25 per cent.	
Depreciation cost per foot of hole drilled	$0.216
Total maintenance and depreciation per foot of hole drilled	$0.572

preciation costs for this well are shown in Table 3. Typical drill-pipe maintenance and depreciation costs for wells of comparable depth in the same field are shown in Table 4.

It can be seen that in spite of the large number of collars that were replaced total maintenance and depreciation costs per foot of hole drilled were $0.572 for drill tubing, compared with $0.584 for drill pipe.

It was quite obvious from this experience that some means of hard-facing the drill tubing collars was needed to reduce wear while drilling under abrasive conditions. The solution of this problem was in the application of a 1-in. band of tungsten carbide with an acetylene torch to the lower end of these couplings.

TABLE 4

Coastal Area, Field B, Typical Drill-Pipe Maintenance, 4½-In. A.P.I. Full-Hole Pipe With Hard-Faced Joints

	Per foot drilled
Maintenance cost:	
Cost to maintain hard facing on joints	$0.130
Cost to replace worn tool joints	0.150
Straightening and miscellaneous	0.030
Maintenance cost per foot of hole drilled	$0.310
Depreciation cost:	
Assuming 12,000 ft. of drill pipe can drill 150,000 ft. of hole and costs $4.56 per foot, and has salvage value of 25 per cent.	
Depreciation cost per foot of hole drilled	$0.274
Total maintenance and depreciation per foot of hole drilled	$0.584

A comparable well in the same field drilled with 5½-in. drill tubing (5½-in. o.d., 15.3-lb., NE 8740 steel, Acme-threaded external upset) but using hard-faced couplings, used only 78 couplings. Comparative maintenance and depreciation costs for the pipe at this well (Field B, Well 7) are shown in Table 5.

It will be noted that maintenance costs in this case with hard-faced collars were $0.21 per foot of hole drilled, as compared with $0.36 for the 4½-in. tubing without hard facing. Although the depreciation on the 5½-in. pipe is higher, the total of maintenance and depreciation was slightly less than for the unhard-faced 4½-in. drill tubing.

The cost of hard-facing 4½-in. collars (original price of collars $3.90) is approximately $4.75, while the cost of hard-facing 5½-in. collars (original price of collars $11.39) is $9-$10. In abrasive formations the hard-faced collars wear several times as long as the bare collars, and therefore have reduced over-all costs.

In nonabrasive formations it may not be desirable to hard-face if collar thread wear occurs faster than outside collar wear. It has been observed many times that the threads inside the collars do wear faster than the male threads on the pipe.

Drilling Rate and Cost Comparison—Coastal Area, Field B

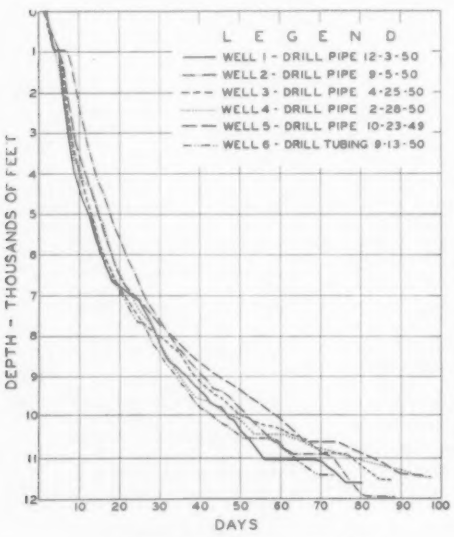
As mentioned, two deep wells have been drilled in the coastal area, Field

TABLE 5

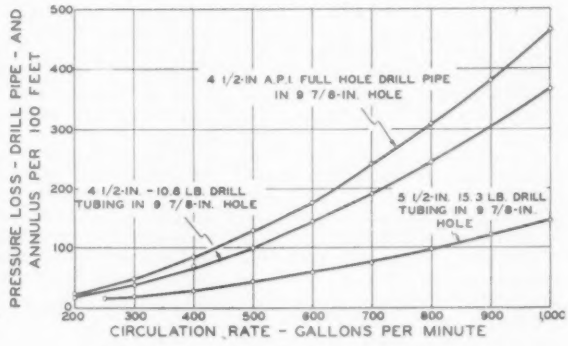
Coastal Area, Field B, Well 7, 5½-In. Drill-Tubing Maintenance and Depreciation

(Interval drilled with 5½-in. drill tubing, 817-10,375, or 9,558 ft.)

Maintenance cost:	
78 hard-faced couplings at $20.60	$1,613
Recut threads	56
Rig-time costs	358
(Change 78 couplings at 5 minute per coupling with rig time at $55 per hour)	
Total	$2,027
Maintenance cost per foot of hole drilled	$0.212
Depreciation cost:	
Assuming 12,000 ft. of 5½-in. drill tubing can drill 90,000 ft. of hole and costs $3.45 per foot and has salvage value of 25 per cent.	
Depreciation cost per foot of hole drilled	$0.345
Total maintenance and depreciation per foot of hole drilled	$0.557


LEGEND
WELL 1 - DRILL PIPE 12-3-50
WELL 2 - DRILL PIPE 9-5-50
WELL 3 - DRILL PIPE 4-25-50
WELL 4 - DRILL PIPE 2-28-50
WELL 5 - DRILL PIPE 10-23-49
WELL 6 - DRILL TUBING 9-13-50
DEPTH - THOUSANDS OF FEET
DAYS

Drilling well progress curves. Fig. 2.


PRESSURE LOSS - DRILL PIPE - AND ANNULUS PER 100 FEET
4 1/2-IN A.P.I. FULL HOLE DRILL PIPE IN 9 7/8-IN. HOLE
4 1/2-IN. - 10.8 LB. DRILL TUBING IN 9 7/8-IN. HOLE
5 1/2-IN. 15.3 LB. DRILL TUBING IN 9 7/8-IN. HOLE
CIRCULATION RATE - GALLONS PER MINUTE

Friction losses through drill pipe and drill tubing. Fig. 3.

B, using drill tubing, the first with 4½-in. tubing with bare collars and the second with 5½-in. tubing having hard-faced collars. The drilling progress achieved with the 4½-in. tubing (Well 6) in comparison with progress of direct offset wells to the same zone is shown in Fig. 2.

It will be noted that drilling progress at this well is as fast, or faster, than the wells drilled with drill pipe at all depths. Since all these wells are required to be within a bottom-hole target it is usually necessary to use whipstocks. A fairer comparison requires that whipstocking time and fishing resulting from whipstocking be deducted from total drilling time.

Table 6 shows net drilling times for these wells after deducting these items, plus time for running and cementing surface casing, lost circulation, and other delays not directly concerned with making hole. The comparison covers only that portion of the time required to drill the hole to the selected comparison depth.

It will be observed that the well drilled with drill tubing has next to the fastest net drilling time to 10,400 ft. It should also be mentioned that the drilling rig used to drill Well 6 (Table 6) with 4½-in. drill tubing was a three-engine, 900-hp. electric rig which was competing with four and five-engine power rigs.

Application of Drill Tubing to Jet Bit Drilling

One of the primary advantages of drill casing and/or drill tubing is that through elimination of tool joints with attendant larger internal diameter, more advantageous combinations of hole and pipe sizes can be obtained. Internal flush lightweight 4½-in. tubing allows greater circulation than 4½-in. A.P.I. full-hole drill pipe.

Even greater circulation can be achieved by use of 5½-in. drill tubing having 6½-in. o.d. collars in place of 4½-in. drill pipe having 5¾ or 6-in. tool joints. Likewise, the weight per foot of 5½-in. drill tubing (15.3-lb.) is less than 4½-in. A.P.I. drill pipe (16.6-lb. plus tool joints). Comparative pressure drops through the various sizes of drill pipe and drill tubing are shown in Fig. 3. Calculations show that to achieve 180 ft. per minute annular rising velocity in a 9⅞-in. hole with 4½-in. drill pipe or 4½-in. drill tubing requires 568 g.p.m. while 495 g.p.m. is needed in the case of 5½-in. drill tubing.

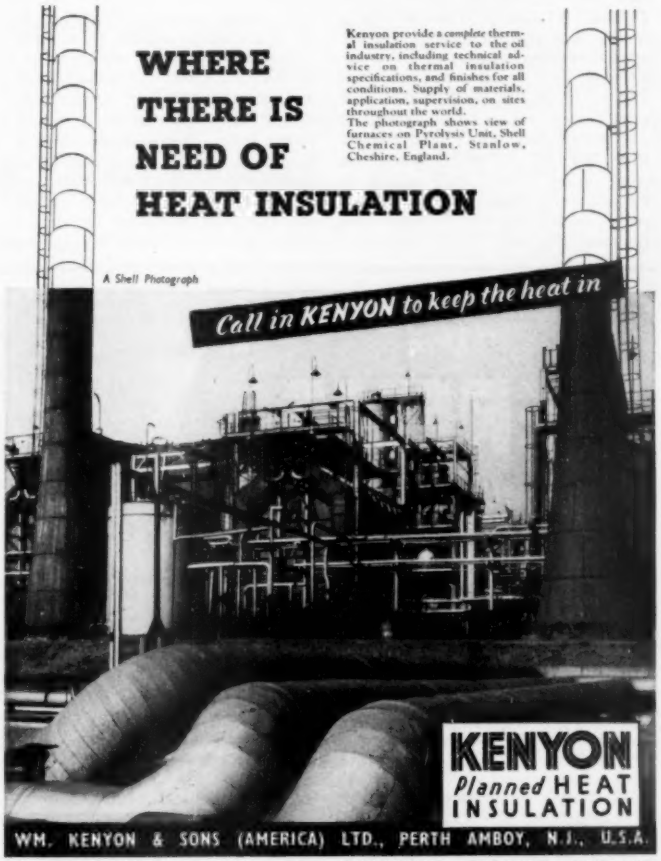
The respective pressure drops for a 10,000-ft. well for pipe and annulus are 1,600 lb. for 4½-in. drill pipe, 1,290 lb. for 4½-in. drill tubing, and 415 lb. for 5½-in. drill tubing. Respective horsepower required to obtain the 180-ft. per minute annular rising velocities are 530 hp. for 4½-in. drill pipe, 427 hp. for 4½-in. drill tubing, and 120 hp. for 5½-in. drill tubing. The advantages of the larger pipe for use with jet bits are obvious.

With this advantage in mind, Well 7 was selected for the first full-scale test of jet bits in the coastal area, Field B. Because of the high rising velocities and jet velocities which were made possible through use of the 5½-in. tubing in 9⅞-in. hole, the total rotating time to 10,000 ft. was reduced to some 410 hours as compared with 600 hours for comparable wells drilled with conventional bits and 4½-in. drill pipe.

Due to the inexperience of the crews with running drill tubing and because of the fact that 5½-in. power tongs were not available for this job, considerable lost time was experienced in making round trips. This, plus unfavorable whipstocking experience, resulted in the over-all progress for the well being approximately comparable to the comparison wells. Additional tests of the 5½-in. tubing in this field are planned. Maintenance and depreciation costs of the pipe on this well have already been discussed.

Use of Drill Tubing in the Los Angeles Basin Area, Field C

During the past 2 years an extensive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The photograph shows view of furnaces on Pyrolysis Unit, Shell Chemical Plant, Stanlow, Cheshire, England.
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TABLE 6—DRILLING-TIME COMPARISON, COASTAL AREA, FIELD B

Item—	Well No. 1	2	3	4	5	6
Completion date	2-51	12-50	7-50	6-50	1-50	11-50
Depth when casing run (1)	11,020	10,880	10,880	10,400	10,400	10,500
Comparison depth (2)	10,400	10,400	10,400	10,400	10,400	10,400
Days to depth (1)	56	62	70	53	66	51
Adjustment for depth (2)	6	7	7	0	2	3
Days other	3	4	2.5	2	4.5	5.5
Days whipstocking	10	3	10	2	0	0
Days fishing due whipstocking	0	0	0	1	0	0
Net	37.0	48.0	50.5	48.0	59.5	42.5
Hole size, in.	10⅝	10⅝	10⅝	10⅝	10⅝	9⅞
Drill pipe, in.	4½	4½	4½	4½	4½	
Drill tubing, in.						4½
Contractor-Shell	Cont.	Cont.	Shell	Shell	Shell	Shell

development campaign has been conducted by Shell Oil Co. in the Los Angeles Basin area, Field C. Three of the company rigs available for use in this field were equipped with draw works driven by single engines of 250-270 hp. Since the wells drilled are in the range of 3,000 to 7,000 ft. deep, it became mandatory to initiate a program of use of drill tubing in order that the hoisting capacity of the available equipment would not be exceeded.

As a result, 16 wells have been drilled using 4½-in. drill tubing in 9 to 9⅞-in. hole for a total footage of 80,200 ft.; 10 wells have been drilled using 5½-in. drill tubing in 9⅞ and 11-in. hole for a total footage of 44,400 ft.; and 4 wells have been drilled in with 3½-in. tubing for a total footage of 3,400 ft. Combined footage drilled with the three sizes used in this field totals 128,000 ft.

The 4½-in. drill tubing used in this field has been taken from a "pool" of some 34,000 ft. of pipe. Total footage drilled by this pool of pipe is 172,000 ft. and indications are that a 12,000-ft. string should drill at least the equivalent of 90,000 ft. of hole.

Drilling conditions which have to be met in Field C include drilling through relatively hard fractured shale having high angle dips and many fault zones, some hard conglomerate, and hard sand. Due to the complex stratigraphy all the holes are directionally controlled within 50 to 100-ft. cylinders and maximum angles of deviation required reach 50° while average wells have deviations of 20° to 25°. It is also necessary to do considerable coring and testing.

Under these conditions drill tubing has been found to have several advantages. One is that due to its low weight and high bearing area there is less tendency for keyseating in high-angle holes. Likewise, whereas 18° taper tool joints have a tendency to wear to a square shoulder in the high-angle holes, the tubing-collar maintenance is not excessive. The additional circulation obtained with the drill tubing is also advantageous for jet bits and for circulating out caving shale.

There are two disadvantages which should also be mentioned. One is that the allowable pull on stuck pipe is less than for drill pipe, since the tensile pull at minimum yield for 4½-in., 10.8-lb. NE 8740 tubing is 254,000 lb. as compared with 4½-in., 16.6-lb. Grade E drill pipe having a tensile pull of 330,000 lb.

This apparent disadvantage is partially offset in that the weight of the string is less; therefore, the net pull on the fish at depth becomes more nearly equal. For example, at 10,000 ft. 4½-in. drill pipe would weigh with tool joints (neglecting buoyancy) about

(Continued on page 147)

"THE PERFECT COMBINATION"

NEMCO TWO-SPEED COMBINATION MOTOR STARTER MOUNTED IN NEMCO EXPLOSION-PROOF ENCLOSURE

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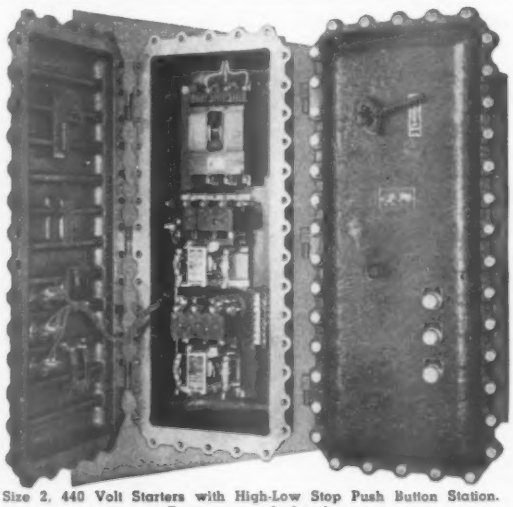
This starter is used for the control of two-speed motors in Class 1, Group D, Hazardous Locations. Outstanding features include: (1) Wide angle opening of swing door gives complete accessibility; (2) Extra wide flame paths on ground surfaces between cover and box insure safety; (3) Pan-mounted equipment can quickly be removed, providing maximum ease and space for pulling in wires; (4) Start-stop station and resets are mounted directly in cover; (5) Offered in sizes up to and including Size 3, 440 Volt, 50 H.P. You are invited to write for complete information.



Size 2, 440 Volt Starters with High-Low Stop Push Button Station. Door open and closed.

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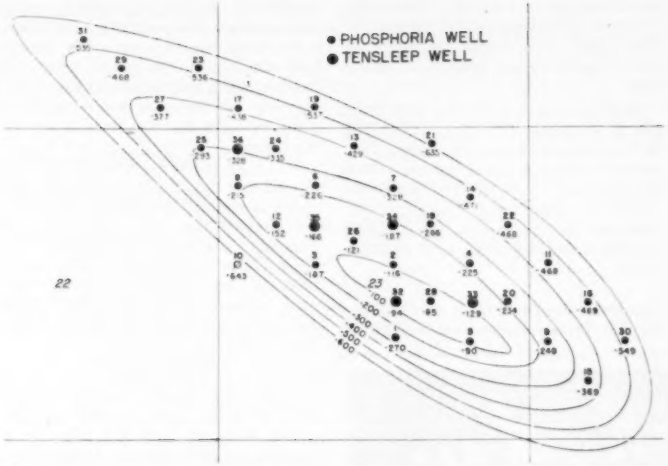


Structure map of Gebo field, Township 44n-95w. Contours on Phosphoria formation. Contour interval: 100 ft.

GEOLOGICAL REPORT:

Gebo Field, Hot Springs County Wyoming

This is one of four oil-producing structures in the Big Horn basin recognized as exhibiting inclined water level.

by E. C. Mees* and G. F. Bowers†

GEBO field is located in Sections 14, 15, 22, 23, and 24, Township 44n and Range 95w, Hot Springs County, Wyoming, on the southern rim of the Big Horn basin, 13 miles due north of Thermopolis.

The anticlinal structure is clearly defined by the high Mesaverde escarpment which encloses the field on three sides. Surface topography within this closure consists of low rolling hills with a maximum relief of a little over 100 ft. Coal Draw, an intermittent stream, drains the area into the Big Horn River.

The Gebo structure was long known as a closed anticline and was under lease and drilled several times prior to the discovery of oil in the Embar in 1943. Between 1916 and 1931, two wells drilled to the Frontier and one to the Morrison, failed to find production.

Unusually thick Madison and Big Horn sections here suggest that steep dips were drilled below the Tensleep; apparently, the well crossed the structural axis to the steep flank.

Structure . . . Gebo Dome lies along the south side of the Big Horn structural basin. It is one of the numerous en echelon folds on the north flank of the Owl Creek Mountains.

The structure is a northwest-southeast trending asymmetrical anticline with its seep side mountainward. The plunge on the northwest is not as great as that on the southeast. Surface dips in the Cody shale reach a maximum of about 20° on the gentler northeast limb. Mapped surface closure is about 500 ft.

Several minor transverse normal faults cut the fold at the surface. A normal strike fault, with a displacement of 175 ft., cuts the Frontier on the north flank but would be well beyond the productive limit of the Embar-Tensleep should it continue to that depth.

There is a pronounced intensification of folding with depth. The flanks become steeper and the axis shifts toward the northeast. The No. 1 well is located on the surface high and encountered 45° dips in the Embar; at this depth it was on the steep south flank of the structure. The proven closure on the Embar is about 700 ft.

Stratigraphy . . . Buff and tan Mesaverde sandstones of Upper Cretaceous age form escarpments that flank the Gebo anticline. Gray, marine Cody shale is exposed in the core. The following subsurface stratigraphic section is present in 28 unit, which was drilled to the Cambrian:

	Thickness in feet
Cretaceous	
Cody shale—medium gray, marine shales	1,153
Frontier formation—gray, salt and pepper sandstone with silty, dark gray shales	947
Mowry shale—gray, hard, siliceous marine shales	405
Muddy sandstone — dirty, quartzose sandstone	40
Thermopolis shale—dark shale	158
Dakota sandstone — gray, sandy shale with quartzose sandstone	165
Fuson shale — gray, variegated shale	40
Lakota sandstone—white, coarse, quartzose sandstone	75
Jurassic	
Morrison formation — variegated, clay shales with fine, greenish sandstone	195
Sundance formation — alternating gray, marine sandstone and shale with limestone streaks	359
Triassic	
Chugwater formation — red, silty shales and sandstones with anhydrite	1,066
"Curtis" sandstone — gray, fine sandstone	40
Dinwoody formation—gray, green, dolomitic shales and anhydrite	58
Permian	
Phosphoria limestone—gray, marine dolomite with green shale and anhydrite	276
Pennsylvanian	
Tensleep sandstone — white, marine, crossbedded, quartz sandstone with marine limestone beds	306
Amsden formation — marine, cherty limestone with red, marine shales and some sandstone at base	290
Mississippian	
Madison limestone — tan and cream, marine limestone becoming buff and cherty at base	626
Devonian	
Three Forks limestone — brown and tan, crystalline limestone	87
Ordovician	
Big Horn dolomite—tan, marine, cherty dolomite with pale yellow, silty sandstone at base	428
Cambrian	
Gallatin formation — greenish, glauconitic, dolomitic sandstone and shale	—

Reservoir Characteristics

Gebo field has a very active water drive. It is believed that it will effectively maintain reservoir pressures for the life of the field.

The average gross thickness of the

*Division geologists and † district geologist, Continental Oil Co., Casper, Wyo. From the Wyoming Geological Association's Seventh Annual Field Conference Guidebook, Southern Big Horn Basin, Wyoming, 1952.

Embar productive zone is 121 ft., of which, 109 ft. is calculated as effective pay. The Embar is highly fractured dolomite that responds well to acid treatment.

In the Embar reservoir, probably most of the fluids are led into the wells by a network of fractures and crevices. This network varies throughout the field and thus controls the individual productivity of the wells. Water encroachment on or near the steep flank is very active. The wells on the gentle flank are much more stable with moderate water encroachment. Thus the fractures that are responsible for the high yield of oil on the gentle flank are also responsible for the channelling of water and by-passing of oil on the steep flank. The Embar reservoir has an estimated 625-acre proven producing area.

In recent Tensleep development drilling, a saturated sandstone was found in the basal portion of the Embar. This zone produced the same gravity oil as the Tensleep reservoir. The sandstone is probably reworked Tensleep that was deposited in Embar seas. This section exhibits up to 80 ft. of sand development.

Tensleep . . . The average net thickness for the Tensleep sandstone is approximately 100 ft. The Tensleep is not a homogeneous reservoir. The sandstone is fractured on the steep flank, but is hard and tight on the gentle flank with low porosities and permeabilities. This reservoir has the same water encroachment problem on the steep flank as the Embar.

Embar development drilling has proved that the Tensleep reservoir possesses a smaller producing area than the Embar; the areal extent of the Tensleep is not yet established. Because of the low porosity and permeability of the Tensleep, shooting with nitroglycerine is necessary to obtain favorable production in some of the wells.

Development

Embar and Tensleep formations produce in Gebo field. A test well, 28 unit, was drilled into the top of the Cambrian. The Mountain States Petroleum Co.'s Dakota test, drilled in 1926, found 3 million cubic feet of sweet gas in the Muddy sandstone. Well 26 unit, which is located high on the structure, tested the "Curtis" sandstone and found some oil with water.

The cumulative total production for Gebo to April 1, 1952, is as follows:

Embar	3,446,738 bbl. of oil 157,677,000 cu. ft. of gas
Tensleep	16,401 bbl. of oil 138,000 cu. ft. of gas

The Tensleep production figures represent only the test oil that has been produced.

Embar crude has an average gravity of 29°-29.8°; lighter gravity crudes are produced up-structure. The Tensleep crude is heavier than that of the Embar; the gravity is 24.9°.

The average depth to the Embar is about 4,800 ft. Production is greatly increased by acidization. The discovery well produced 218 bbl. per day natural, and after a 1,500-gal. treatment with 15 per cent acid, it produced 2,595 bbl. per day.

Oil produced at Gebo is pumped to Kirby and into Service Pipeline Co.'s system.

Acknowledgments

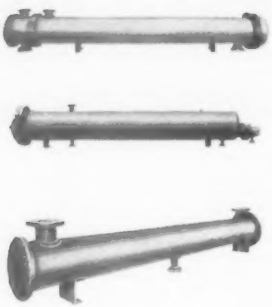
The writers are indebted to Continental Oil Co. for permission to publish this paper and also wish to acknowledge the assistance and criticisms given by coworkers in the company.

About the Authors

E. C. Mees is division geologist for Continental Oil Co. at Casper. He received his M.S. degree in geology from the University of Wisconsin in 1948 and joined Continental that year. He became division geologist in April 1952.

G. F. Bowers is Continental's dis-

AND SAW A PROBLEM



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trict geologist at Casper. Bowers joined Continental shortly after receiving an M.S. degree in geology at the University of Michigan in 1949. He became district geologist in May 1951.

First Commercial "Catforming" Unit

(Continued from page 117)

per cent chrome, ½ per cent molybdenum above 500° F. except for the reactors. The reactors are carbon steel with a gunited internal lining. There are three identical reactors, each 30-in. diameter inside the lining and 5 ft. 6 in. on the straight side with conical top and bottom heads. Each reactor contains 900 lb. of catalyst.

Two 100-hp. compressors are installed, one being a complete spare. One compressor is an existing horizontal, single-cylinder, gas-driven machine, while the standby is steam driven. The only other power requirement is for the reactor feed and stabilizer reflux pumps, both of which are reciprocating steam pumps.

There are two horizontal heaters which are fired from both sides with Selas Duradiant gas burners. The all-welded tubes are in two vertical center rows in each furnace. The first heater is the primary charge furnace, while the second heater contains two coils for reheating service between reactors. These heaters are characterized by low residence time, low pressure drop, and even heat distribution. Total furnace duty is approximately 2.5 million B.t.u. per hour.

The preheat exchangers are shell and tube, single-pass units. Approximately 65 per cent of the total heat requirement of the unit is supplied by this exchange. Over-all heat-transfer coefficients of about 90 B.t.u. per hour per square foot per degree Fahrenheit, are being obtained.

As this is written the McBride unit has been on stream for 2 months. To date, there have been no operating difficulties and no significant decline in catalyst activity. The forformance of the unit and the process have fully met the expectations of the three organizations which took part in this first commercial Atlantic catalytic reforming unit.

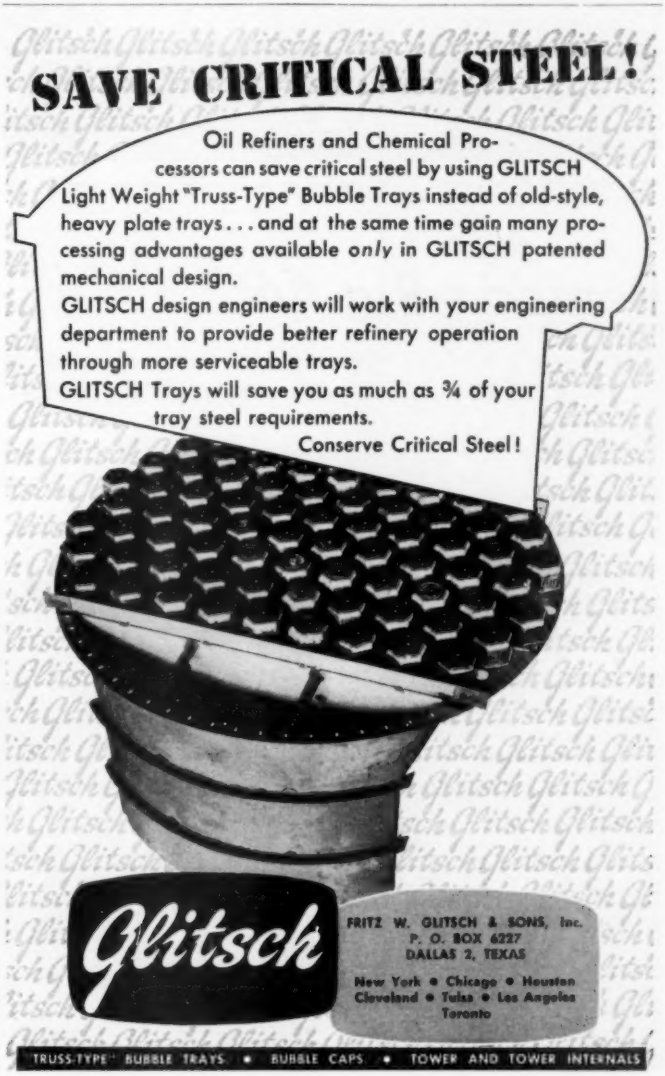
BOOKS

PETROLEUM TANKAGE AND TRANSMISSION. Written and edited by Hubert L. O'Brien. Published by Graver Tank & Manufacturing Co., Inc., East Chicago, Ind. 176 pp. $5.

This volume is an analytical presentation of previously published material, other data known and in use but never before published, and a great deal of new information collected over a period of many years. The subject matter is organized into four chapters: The Storage of Petroleum and Its Derivatives; Conservation Equipment; A Guide to the Economic Selection of Tankage, and Fluid Flow in Practice. In addition, the book also contains two appendixes, the first containing notes on the correct selection of pumping equipment and the second offering valuable miscellaneous data. One of the most informative sections of the book is Chapter 3, in which the author, through the use of charts and figurative examples, clearly points out the specific advantages of certain types of equipment over others.

CALCULATIONS METHODS OF ABSORPTION, STRIPPING, AND FRACTIONATION OPERATIONS. Published by Natural Gasoline Association of America, Tulsa. 48 pp. $2.

This is a reprint of papers presented in the Extraction and Separation Calculations Forum at the thirty-first annual convention of the N.G.A.A. at Houston, April 30-May 2, 1952. The collection of articles represents the results of an effort to present an adequate collection of up-to-date methods for estimating reflux and number of equilibrium steps, or their analogs, in separation processes used in the natural-gasoline industry, according to an introduction by Karl H. Hachmuth, who states that "in using the methods presented in these papers, the engineer will find experience the most valuable aid and guide to satisfactory and quick solutions. The examples given are intended as suggestions."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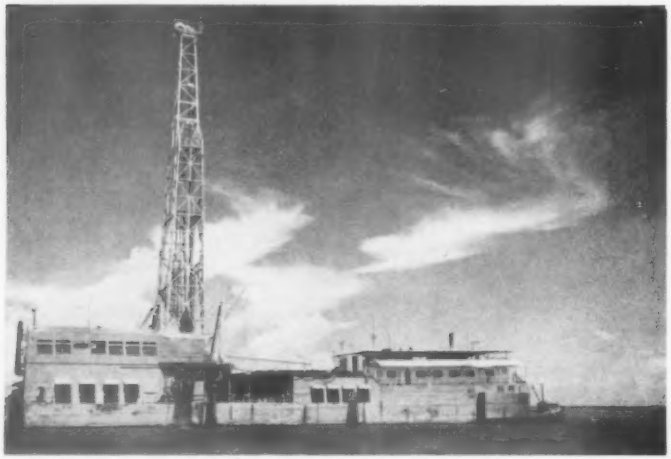


MOUNTED ON CONVERTED L.S.T., Penrod's rig is shown here off the coast of Mississippi drilling for Gulf Refining Co.

VISITING RIG are F. A. Collette, left, assistant division manager, sales department, Gulf Refining Co., Hattiesburg, Miss., and W. W. Ramseuer, superintendent, Alabama-Mississippi production division of Gulf Refining, right. Penrod's tool pusher, Otis Solomon, is in center.

Penrod's Rig 44...

Operating now off Mississippi, this barge-mounted rig has drilled 25 wells in 4 years without a major shutdown

PENROD DRILLING CO.'S Barge Rig No. 44, which has drilled 25 wells in the gulf since it was put in operation 4 years ago, has many unique features.

The fact that it has been able to drill 25 wells in 48 months—with 5 of them going below 10,000 ft. and 1 below 16,000 ft.—without any downtime for major repairs, attests to its capabilities.

The rig is mounted on a converted LST, using a Model 18-P "double-bulge" Emsco jackknife derrick with a capacity of 800,000 lb. The rig can be laid down within 30 minutes in case of an approaching storm.

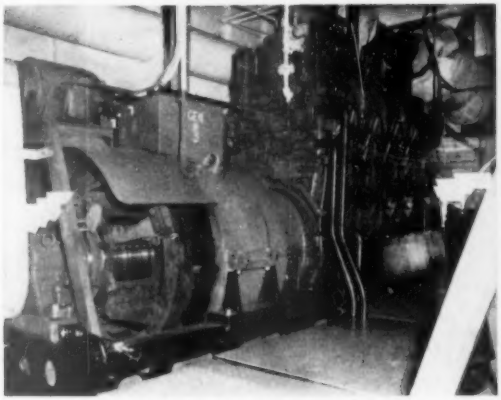
After a well is completed and the pipe singled down, the entire rig can be moved and the conductor pipe set on a new location from 10 to 15 miles away during the daylight tour.

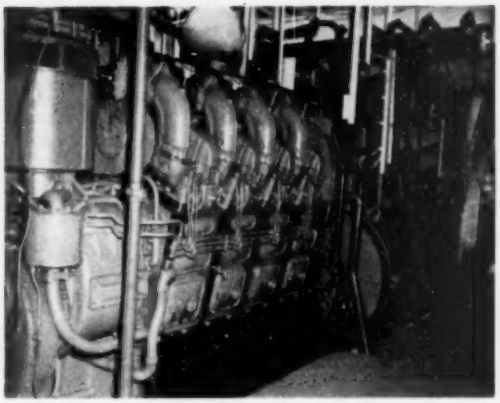
Power . . . Power to the rig is supplied by three 720-hp. G-M Cleveland diesels, and three 175-hp. Superior diesels, the latter being used to power auxiliary equipment.

The G-Ms each power a Westinghouse 500-kv., 120-240-volt, 2,080-amp. generator. Controls are arranged so that any combination of all three motors can be connected to the hoisting motor for quick round trips, or to the mud pumps in case of emergency.

Mounting . . . The rig, mounted on the converted LST, is 238 ft. long by 50 ft. wide. It contains a slot 12 ft. by 78 ft. running back under the draw works which was necessary to allow the galley to be left intact with the

CREW numbers 11 men. Front row, left to right: L. R. Watler, electrician; M. Vidrine, and M. P. Guhman, cooks; Otis Solomon, tool pusher, Bufas, La.; Albert Roberson, boat captain. Back row: R. J. Pontift and Clyde Davis, helpers; W. W. Summerlin, and W. H. Walker, floormen; Travis Davis, derrickman; and J. C. Craft, driller.





TWO VIEWS of units which power the rig. Any of three units can be applied to either the draw works or mud pumps.

ballast pump and boiler room beneath.

Distance measures 36 ft. from derrick floor to the bottom of the barge. The drilling rig has been used successfully over as much as 19 ft. of water. The derrick is 136 ft. tall, with a 16-ft. by 26-ft. base, and a 5½-ft. by 6½-ft. crown.

Procedures . . . Normal procedure in drilling is to begin with 24-in. hole, and set 170 ft. of 20-in. conductor pipe. A 17½-in. hole is usually cut to about 2,000 ft., where 13⅜-in. surface pipe is run. Hole is then carried at 9⅞-in. until a favorable formation is encountered. The hole is then reamed to 12¼ in., and 9⅝-in. pipe is set for production test, after which drilling is resumed inside the 9⅝-in. pipe.

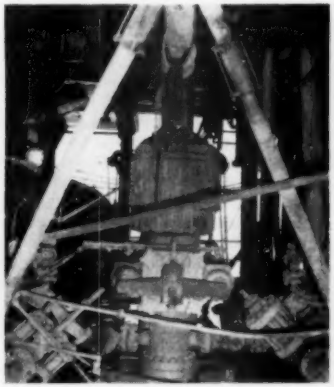
Mud . . . The rig is equipped to handle bulk muds with a system of eight tanks, each with a capacity of 500 sacks. Mud is handled by air jets, which permit it to be jetted from the dump tank to any of the eight tanks. A total of 7,000 sacks can be handled on the barge at one time. Feeds to mud hoppers are also operated by air pressure.

Blowout preventer . . . The blowout-preventer equipment consists of two Cameron Q.R.C.s and one Hydril with bleed-off connections in between. A complete set is kept on hand for each of three sizes of casing: 13⅜-in., 10¾-in., and 7-in.

Quarters . . . Since quarters and mess hall are right on the barge, crews are accommodated through the 24-hour period. They work 10 continuous days and then are off for 5 days. Shifts are of 12-hour duration.

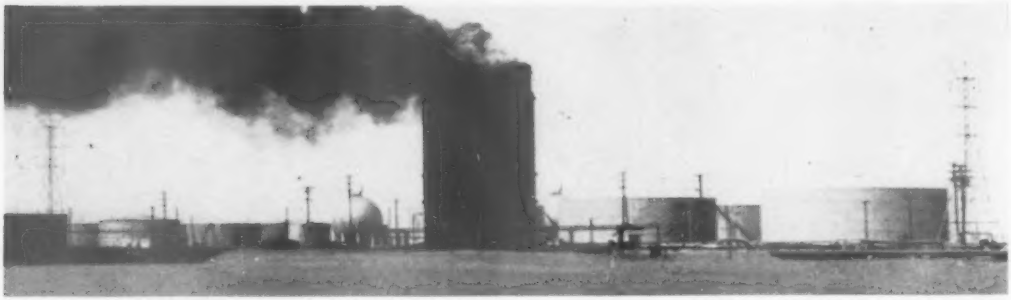
PUMP ROOM, showing how motor is mounted between two pumps so power can be applied to either at will. All horsepower available can be switched to motor (right) in emergency.

REAR VIEW of rig, showing slot.

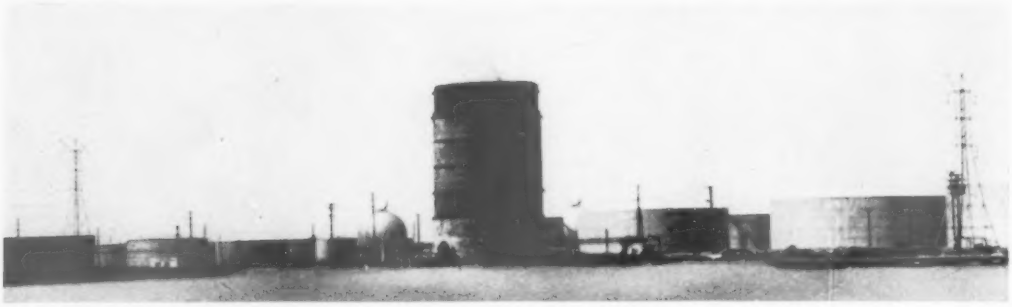


VIEW of blowout-prevention equipment.

DRILLER J. C. Craft beside draw works.



Troublesome smoke at Bayway plant . . .



. . . is eliminated by "atomized" spray

USING a highly atomized water spray in a new ground flare of their own design, engineers of Esso Standard Oil Co. have successfully eliminated troublesome smoke at the Bayway Refinery, Linden, N. J.

The main refinery flare at Bayway handles the releases from the main gas-collecting system and the gas-absorption plant. It consists of three concentric masonry stacks. The smallest is 2½ ft. in diameter and 4 ft. in height, the intermediate stack is 6 ft. by 12 ft., and the outside stack is 14 ft. by 30 ft.

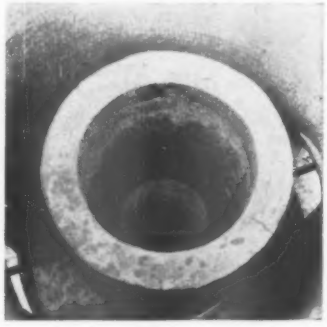
Meets need . . . Following a study of flaring methods, the new unit was designed and built to meet the need for a simple, economical method for flaring large volumes of gas on occasion, without smoke generation.

The stack is designed to handle 150,000 cu. ft. of gas per hour, and has provided smokeless burning at rates in excess of design, by increasing the water-spray pressure using a pump. Its operation is based on the introduction of gas and water spray, combustion, and flaring in gradual stages.

How it works . . . Gas is admitted to the innermost stack in a 12-in. line, where it mixes with a water spray. The gas-water vapor mixture is ignited by two pilot lights placed in opposite positions at the top of the inside stack.

Initial combustion takes place in the intermediate stack. The outside stack is equipped with four archways which admit up to 150 per cent excess air over the theoretical quantity. At normal rates of flare gas, the burning takes place entirely inside the intermediate stack. When the gas rate rises, the flame grows higher until it emerges into the outside stack where complete combustion takes place.

Satisfactory operation of the flare is obtained using a water pressure of 32 psi. when flaring 110,000 cu. ft. of gas per hour, and 60 psi. water pressure on the spray nozzle is sufficient to give smokeless burning when flaring gas at the rate of 160,000 cu. ft. per hour (*The Oil and Gas Journal, August 4, 1952, page 94*).



Picture at top shows flaring of equal amounts of gas without water-spray injection. Photograph below it shows flaring of equal amounts of gas with water-spray injection. Picture at right is a closeup of the flare.

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Old Davenport was no loveseat

It was a bad break for the operator when Davenport No. 1 blew out and cratered. This well in the La Blanca Field of South Texas was blowing an estimated 100 million cubic feet of gas and oil daily over the countryside. That was in 1938.

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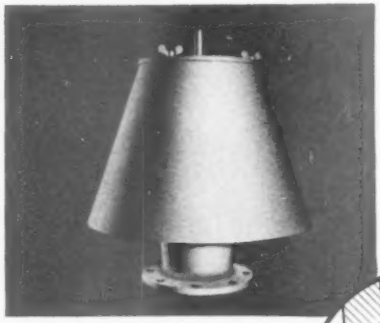
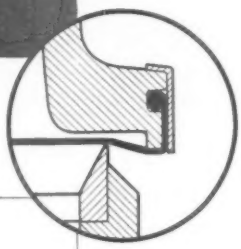
MEMBRANE SEATING: A non-metallic membrane stretched across the pressure and vacuum valves, provides membrane-to-metal seating.

TIGHT PRESSURE AND VACUUM CLOSURES: Openings in the center of the membranes permit tank pressures to be balanced by the pressure on top of the pressure membrane and atmospheric pressures to be balanced by the pressure on top of the vacuum membrane. This balanced, equalizing of pressures assures tight seating of the membrane on the aluminum seating ring; positively prevents leaking within the pressure and vacuum range for which the particular regulator is designed; and provides extremely close correlation between opening and closing pressures.

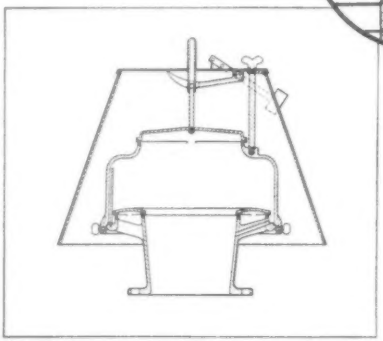
UNOBSTRUCTED FULL VENTURI FLOW: The widening, flaring path of pressure flow from the base of the valve up through the body, and down inside the cover, produces the full unobstructed "venturi" pattern so highly desirable; and extremely large flow capacities.

SIZE RANGE: 6, 8, 10 and 12 inch.





Above: View of Fully Assembled Valve, Covers in Place: Below, Sectional View Showing Pressure and Vacuum Valves, Membranes, Guides, Support Rods, etc.---View at Right Shows How Pressure on Top the Membrane Assures Tight Leak-Proof Seating of the Membrane on the Aluminum Seating Ring.



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THE JOURNAL'S WEEKLY
Engineering Reference
SECTION
No. 31

FANS AND BLOWERS:

Part 12–Use of Fan Laws . . . Examples

by M. Van Winkle*

FAN laws are extremely useful in converting fan operating characteristics quantitatively from one set of conditions to another. The following examples will serve to illustrate the use of these fan laws.

Examples:

1. A fan delivers a maximum of 22,000 cu. ft. per minute at 5-in. H_2O pressure, at 1,000 r.p.m. and requires 20 hp. It is desired to decrease output to 10,000 cu. ft. per minute by decreasing the speed of the fan. What is the required speed and horsepower and what pressure would be developed?

Solution:

$$Q_1 = aS_1$$

$$a = \frac{Q_1}{S_1} = \frac{22{,}000}{1{,}000} = 22$$

$$S_2 = \frac{Q_2}{a} = \frac{10{,}000}{22} = 455 \text{ r.p.m.}$$

* * *

$$W_1 = cS_1^3$$

$$c = \frac{W_1}{S_1^3} = \frac{20}{(1{,}000)^3}$$

$$W_2 = cS_2^3 = \frac{20}{(1{,}000)^3} \times (455)^3$$

$$= 0.094 \text{ hp.}$$

* * *

$$P_1 = bS_1^2$$

$$b = \frac{P_1}{S_1^2} = \frac{5}{(1{,}000)^2}$$

$$P_2 = bS_2^2 = \frac{5}{(1{,}000)^2} \times (455)^2$$

$$= 0.1014 \text{ in. } H_2O$$

2. A fan delivers 10,000 cu. ft. per minute of air ($\rho = 0.075$ lb. per cu. ft.) at 2-in. H_2O pressure, speed 800 r.p.m., hp. = 6. It is desired to raise the temperature of the air such that the density becomes 0.062 lb. per cu. ft. For the same fan speed what will be the delivery pressure and horsepower requirement?

Solution:

$$P_1 = d\rho_1$$

$$d = \frac{P_1}{\rho_1} = \frac{2}{0.075}$$

$$P_2 = d\rho_2 = (2/0.075)\ (0.062)$$

$$= 1.65 \text{ in. } H_2O$$

* * *

$$W_1 = d''\rho_1$$

$$d'' = \frac{W_1}{\rho_1} = \frac{6}{0.075}$$

$$W_2 = d''\rho_2 = (6/0.075)\ (0.062)$$

$$= 4.96 \text{ hp.}$$

3. What speed must the fan in Example 2 turn to deliver at 2 in. H_2O pressure and what volume and horsepower will be delivered?

Solution:

$$S_1 = e' \frac{1}{\rho_1^{0.5}}$$

$$e' = S_1\rho^{0.5} = (800)\ (0.075)^{0.5}$$

$$S_2 = e' \frac{1}{\rho_2^{0.5}}$$

$$= 800\ (0.075/0.062)^{0.5} = 800 \text{ r.p.m.}$$

* * *

$$Q_1 = e \frac{1}{\rho_1^{0.5}}$$

$$e = Q_1\rho_1^{0.5} = 10{,}000\ (0.075)^{0.5}$$

$$Q_2 = e \frac{1}{\rho_2^{0.5}}$$

$$= (10{,}000)\ (0.075/0.062)^{0.5}$$

$$= 11{,}000 \text{ cu. ft. per minute}$$

* * *

$$W_1 = e'' \frac{1}{\rho_1^{0.5}}$$

$$e'' = W\rho_1^{0.5} = 6\ (0.075)^{0.5}$$

$$W_2 = 6\ (0.075/0.062)^{0.5} = 6.6 \text{ hp.}$$

*Professor of chemical engineering, University of Texas.

References

1. A.S.M.E. Test Codes for Centrifugal Compressors, Exhausters, and Fans, A.S.M.E., 1935.
2. Buddenberg and Wilke, Ind. Eng. Chem., 41, 1345 (1949).
3. Durand, W. F., Aerodynamic Theory, Vol. III, p. 138.
4. Perry, J. H., Chemical Engineers' Handbook, third edition, p. 370 (1950).
5. Powers Handbook on Fans, Power, October 1951, p. 88.
6. Sturtevant Condensed Engineering Data Catalog, No. 500, B. F. Sturtevant Co., Hyde Park, Boston, Mass.
7. Wilke, C. R., Jour. Chem. Physics, 18, 517 (1950).

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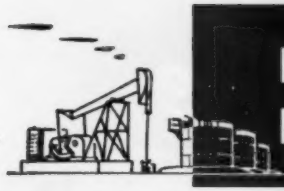

Mixtures for Oil Recovery by Solvent Methods

by Ralph F. Nielsen*

BECAUSE of the large quantity of oil left in a formation after a water drive or gas drive, rather serious consideration has been given to solvent-extraction methods in recent years. Such a solvent may be a light hydrocarbon like propane, which is liquid at moderate pressures, or it may be a dry gas composed chiefly of methane. In the latter case, since methane is not liquefiable at formation temperatures in the ordinary sense, very high pressures must be used so that the gas becomes dense enough to act like a liquid solvent. In shallow fields where extreme pressures cannot be used, liquefiable or "low-pressure gases" (L.P.G.) would have to be used.

In considering the economics of such a process the ease of recovery of the gas enters in. It is desirable to recover a good part of the gas in the field separators but, still more, it is desirable that the gas remaining in the formation in liquid form be recoverable. To this latter end it would be expected that a mixture might be used which can be compressed to a liquid but which has a high enough bubble point to produce itself from the formation in a reasonable length of time, so that it can be used again in an adjoining area.

The relation between the composition of these mixtures and the conditions of liquefaction and vaporization may be calculated by the use of "equilibrium constants" for the constituents. These are defined for each constituent as:

$$K = \frac{y}{x} = \frac{\text{mol fraction in vapor}}{\text{mol fraction in liquid}}$$

The bubble point or pressure needed to completely liquefy a binary mixture may be calculated as shown in the following illustration for methane and propane. Denoting these by subscripts 1 and 3, respectively:

*Associate professor, petroleum and natural-gas engineering, Pennsylvania State College.

$$x_1K_1 + x_3K_3 = y_1 + y_3 = 1$$
$$\text{or } x_1K_1 + (1-x_1)K_3 = 1 \qquad (1)$$

By looking up K_1 and K_3 at a range of pressures and temperatures the composition having these bubble points is easily calculated.[1] For instance, at 100° F., and at 500, 750, and 1,000 psia. values of K_1 are 4.5, 3.0, and 2.2, and values of K_3 are 0.55, 0.50, and 0.53. Substituting these values in Equation 1 gives x_1 = 0.12, 0.20 and 0.28. Mixtures somewhat richer in methane are in the "one-phase region" at 100° (Fig. 1). For instance, at 100° methane-propane mixtures containing 70 mol per cent methane cannot exist in the presence of an equilibrium vapor phase. However, a mixture of say 25 mol per cent methane would be expected to have good solvent properties for oil when compressed to moderate pressures.

A measure of the recoverability of these mixtures is the degree of vaporization at various pressures below the bubble point. The vaporization from the reservoir would probably be between a "differential" and a "flash" process. The latter is by far the easier to calculate. To calculate the maximum pressure at which a flash process (at 100°) is complete, we may write, since this corresponds to a vapor at the dew point,

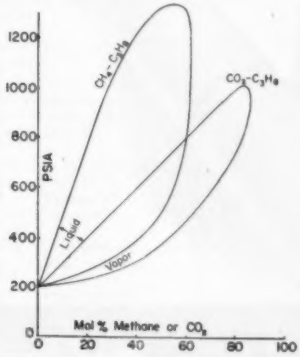

Fig. 1—Phase composition relations of the methane-propane and carbon dioxide-propane systems at 100° F.

$$y_1/K_1 + y_2/K_2 = x_1 + x_3 = 1$$
$$\text{or } y_1/K_1 + (1-y_1)/K_3 = 1 \qquad (2)$$

For assigned values of y_1 this would mean a trial-and-error solution. Hence to obtain the dew-point pressure as a function of composition it is simpler to find the K's at selected pressures and solve for y_1. Thus, at 500, 400, and 300 psia., values of K_1 are 4.5, 6.0, and 8.5 and values of K_3 are 0.55, 0.62, and 0.74, giving y_1 = 0.50, 0.42, and 0.29.

These dew-point and bubble-point curves are shown in Fig. 1, with the loop completed to show the critical pressure and cricondentherm at 100°. Thus, a mixture containing 40 per cent methane and 60 per cent propane may be liquefied at 1,200 lb., and should subsequently produce itself fairly readily from the reservoir. Such a mixture may not be as good a solvent for crude as pure propane.

Mixtures of propane and ethane or propane and carbon dioxide can be liquefied at lower pressure than the propane-methane mixtures. The propane-carbon dioxide system is plotted on Fig. 1 for comparison.[2] Such binary mixtures would be impractical for economic reasons, and mixtures containing several compounds are the most likely to be given serious consideration.

The phase composition curves for these multicomponent mixtures would be intermediate on the figure on the basis of equal propane content. The calculation of the dew-point and bubble-point curves involve simply adding the additional terms to the equations. The bubble-point or dew point can then be found by trial substitution of the equilibrium constants.

References

1. Sage, Hicks, and Lacey. A.P.I. Paper, 1938.

2. Poettmann and Katz. Ind. Eng. Chem., Vol. 37, p. 847.

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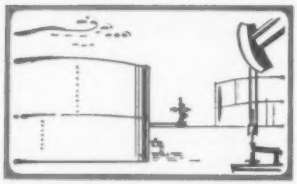
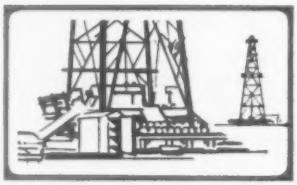
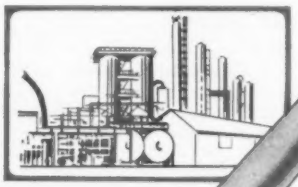


LEASE FLOW LINES AND GATHERING SYSTEMS

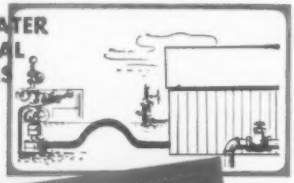


RIG WATER AND FUEL LINES



REFINERIES AND CHEMICAL PLANTS

SALTWATER DISPOSAL SYSTEMS



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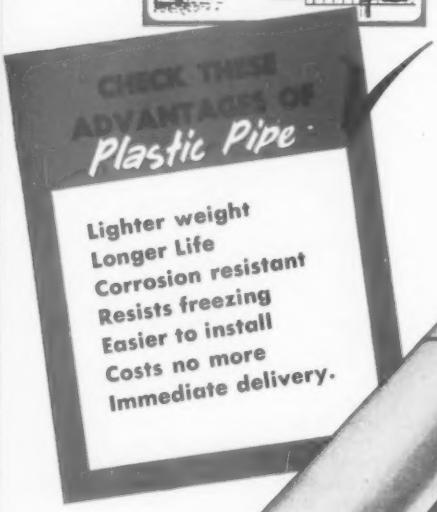

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by W. L. Nelson
Technical Editor

QUESTIONS ON TECHNOLOGY

Sulfur Content of Cracked Products

2—THERMAL CRACKING

Note: Continuation of S.M.T.'s question of November 10, 1952.

The sulfur content of products when cracking West Texas feed stocks was discussed in the issue of November 10, 1952. Charts were shown therein of the sulfur content of products either when cracking thermally or catalytically. The two kinds of cracking do not change the sulfur in the liquid products significantly except, of course, much sulfur is eliminated in the coke and gas during catalytic cracking.

Fig. 1 shows the sulfur content of thermally cracked gasolines derived from the following source crude oils:

Middle East: Bahrein, Iran, and Arabia.
East Texas: (field).
Venezuela: Seven named fields.
West Texas: Six named West Texas fields and Texas Panhandle.
Wyoming and Montana: Four named fields.
California: Many named fields.
Mexico: Panuco, Poza Rica, and unnamed.
Miscellaneous: Mid-Continent, Oklahoma, Kansas, Illinois, North Texas, Pennsylvania, Ranger, Spindletop, and Luling, Texas, Kentucky, Turner Valley, Canada.

The miscellaneous classification is mainly one of convenience. Most of these crude oils contain little sulfur and for this reason the sulfur content of the gasolines is scarcely different from the sulfur content of the gasoline from other low-sulfur crude oils.

Data were adequate for defining the lines of Fig. 1 except in the case of Mexico. It was included primarily because it illustrates extremely high-sulfur products. Material (sulfur) balances indicate generally that the sulfur compounds in Middle East and miscellaneous (Mid-Continent, Pennsylvania, etc.) are least stable during thermal cracking, whereas those in Mexican and Californian oils are most stable.

Few data on the sulfur content of cracked residues (fuel oils) or cracked gas oils were available, but those at hand indicate the following:

SULFUR CONTENT OF FUEL OIL DIVIDED BY SULFUR CONTENT OF FEED STOCK

Misc.—(Mid-Cont., Ill., etc.)	0.7
West Texas and Panhandle	1.25-1.5
Middle East	1.33
Venezuela	1.5
Wyoming and California	1.8

So few points were available that (except for miscellaneous) the sulfur content of residues could have been represented fairly well by a single line represented by 1.5.

TABLE 1—SULFUR CONTENT OF PRODUCTS FROM MISCELLANEOUS CRUDE OILS*

(Do not infer that crude oils are similar in other respects than the sulfur content of the cracked products)

Source of cracking stocks—	Sulfur content of feed	Similar to these sources with respect to sulfur behavior
Arkansas—Smackover[2 15 25]	0.47-3.6	Venezuela
Argentina—general and Commodora Rivadavia[7 32]	0.16-0.31	E. Tex. or M.C.*
Argentina—Sosneado[7]	1.26	Vene. or W. Tex.
East Indies—(solar oil)[32]	0.29	Venezuela*
Greece—Isle of Xanthe[32]	5.48	Venezuela*
Gulf Coast—general, Placedo, Mirando, and Cole Bruni[2 15 25]	0.1-0.36	California
Louisiana—Bull Bayou[25]	0.61	Vene. or Wyo.
Japanese—Oha (Isle of Sakhalin)[32]	0.41	California*
Mississippi—Tinsley[11]	1.08	Middle East*
Romanian[22]	0.01-0.33	East Texas*
Russian—Ural Mountains[13 22]	0.85-2.57	Calif. or Wyo.*
Sumatra—Pladjoe[22]	0.13	Mid-Continent*
Trinidad[13]	0.07	California*

*Sometimes only one stock cracked. These should not be considered as applying to the whole region, field, or state.

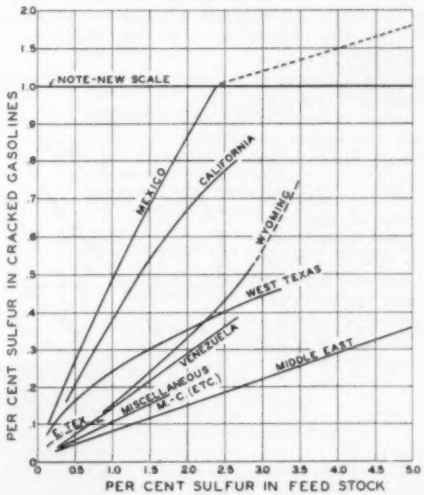

Fig. 1—Sulfur content (weight per cent) of thermally cracked gasolines.

References

1. Windle, G. S., Thiophenol in Cracked Gasoline, Pet. Refiner, Feb. 1944, p. 83.
2. Bottomley, H., Sulfur Compounds in Petroleum and Its Distillates, Ref. Nat. Gaso. Mfr., Dec. 1941, p. 78.
3. Egloff, Lowry, and Truesdale, Ghost of Sulfur in Gasoline . . ., N.P.N., June 11, 18, and 25, 1930.
4. Fowle and Bent, Where Does the Sulfur Go? Pet. Processing, Dec. 1947.
5. Trusty, A. W., East Texas Crude Gives High Gasoline Yield, Pet. Engineer, Jan. 1933, p. 34.
6. Barron et al., Sulfur Distribution in Thermal Cracking and High-Sulfur Feed Stocks, Ind. Eng. Chem., 41, 2687 (1949).
7. Egloff, G., Cracking Latin American Crude Oils—7, Argentine Oils, The Oil and Gas Journal, Jan. 13, 1945, p. 73.
8. Egloff, G., Cracking Latin American Crude Oils—5, Poza Rica, The Oil and Gas Journal, Nov. 18, 1944, p. 218.
9. Read and Egloff, Turner Valley Natural Gas and Crude Oils, The Oil and Gas Journal, March 27, 1941, p. 142.
10. Egloff et al., Illinois Basin Crude Oils., The Oil and Gas Journal, Oct. 26, 1939, p. 81.
11. Read and Egloff, Refining Characteristics of Mississippi Crude, The Oil and Gas Journal, July 31, 1941, p. 148.
12. Egloff and Nelson, Refining Persian Oil, The Oil and Gas Journal, Dec. 27, 1934, p. 73.

13. Egloff et al., Improved Motor Fuel Furnished World by Reforming or Cracking Gasoline, The Oil and Gas Journal, Dec. 26, 1935, p. 90.

14. Egloff and Nelson, Mexican Kerosine Cracked . . ., Ref. Nat. Gaso. Mfr., Nov. 1930, p. 77.

15. Egloff and Nelson, Cracking Light and Heavy Oils, third midyear meeting, A.P.I., 1933.

16. Egloff, G., Man Beats Nature . . ., Pet. World, Dec. 1930.

17. Farragher and Morrell, Cracked Topped West Texas Crude Oils, The Oil and Gas Journal, July 19, 1928.

18. Egloff, G., The Cracking of California Gas Oil and Fuel Oil, The Oil and Gas Journal, Mar. 13, 1930.

19. Gross, Skelton, and Best, Furfural Refines Gas Oil, The Oil and Gas Journal, Mar. 23, 1950, p. 211.

20. Berg et al., Catalytic Desulfurization of High Sulfur Stocks . . ., A.I.Ch.E. 43, 1 (1947).

21. Amero and Wood, Catalytic Desulfurization, The Oil and Gas Journal, May 24, 1947, p. 82.

25. Morrell et al., Refining Cracked Gasoline from Oil . . ., The Oil and Gas Journal, Dec. 30, 1937, p. 101.

23. Ostergaard and Smoley, Gulf Plants . . . Polyform Process, The Oil and Gas Journal, Sept. 12, 1940, p. 52.

24. Wagner, C. R., Cracking Technology, reprint from The Oil and Gas Journal, 1943.

25. Morrell and Egloff, The Economic Aspects of Desulfurization . . ., Univ. Oil Products Co. booklet.

26. Zimmerman et al., Cracking Eastern Venezuelan Crude Oils, The Oil and Gas Journal, Dec. 26, 1940, p. 141.

27. Egloff, G., Cracking Latin American Crude Oils, Eastern Venezuela, The Oil and Gas Journal, June 24, 1944, p. 74.

28. Egloff, G., Cracking Latin American Crude Oils, Western Venezuela, The Oil and Gas Journal, July 1, 1944, p. 64.

29. Egloff, G., Cracking Latin American Oils, Colon, Venezuela, The Oil and Gas Journal, Aug. 12, 1944, p. 76.

30. Egloff, G., Cracking Latin American Crude Oils, Cumarebo, The Oil and Gas Journal, Sept. 9, 1944, p. 72.

31. Mithoff et al., California Crude Oils, The Oil and Gas Journal, Nov. 6, 1941, p. 81.

32. Morrell et al., Refining Cracked Gasoline from Oil Produced Outside of United States, The Oil and Gas Journal, Jan. 6, 1938, p. 54.

33. Read, D., Processing Pennsylvania Crude, Pet. Engineer, June 1948, p. 122.

34. Schutte and Offut, Continuous Contact Coking, Pet. Processing, July 1949, p. 769.

35. Fookson and Bell, Sulfur Compounds in Gasoline, Pet. Refiner, Sept. 1948, p. 87.

36. Francis, C. K., Refining Value of Hendricks Crude, The Oil and Gas Journal, Mar. 7, 1929.

Estimate of T.B.P. Curves from Hempel Curves

"Will you please explain how to use your 'Answer' of September 1, 1952, in obtaining a Hempel curve, so that we will know that we are using the method correctly?"—F.M.C.

Fig. 1 shows true-boiling-point curves that were computed or estimated from experimental Hempel curves. The T.B.P. curve of the 39.8° A.P.I. crude oil was computed as follows, using the method (Table 1) of the September 1, 1952, issue, page 117.

The midboiling point of the 39.8° A.P.I. Hempel curve is 492° F. (50 per cent) and it can be seen (Table 1) that the 50 per cent temperature on T.B.P. curve will be only a few degrees lower (about 486° F.). Thus, the line of Table 1 for a T.B.P. temperature of 500° F. (reduced by about 2° because 486° F. is lower than 500° F.) was used. The following tabulation indicates the computations. The Hempel temperature of 200° F. (at 14 per cent) is reduced by 12° F., giving a T.B.P. temperature of 188° F. This is also plotted at 14 per cent.

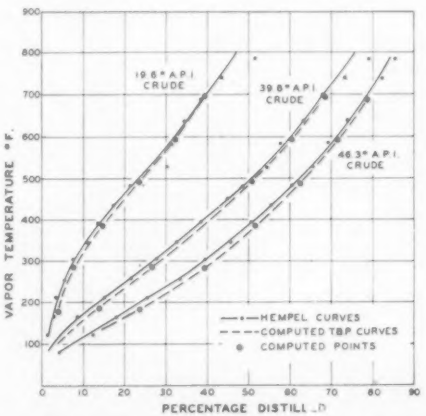

Fig. 1—Estimate of the top curves of three crude oils from their Hempel distillations.

Hempel temperature	Subtract these °F. to obtain T.B.P. temperature	T.B.P. temperature
200	12	188
300	11	289
400	10	390
500	7	493
600	6	594
700	6	694

Relation of Saybolt Thermo Viscosity to Other Viscosity Scales

"We have a specification that calls for Thermo Viscosity. Where can we learn of it, and how is it related to other viscosities?"—R. C. A.

Saybolt Thermo Viscosity (New and Revised Tag Manual for Inspectors of Petroleum, Refinery Supply Company, Tulsa) has been used widely for determining the viscosity of very thin liquids such as gasoline, naphtha, or kerosine. All of these have Saybolt Universal times that are less than 32 seconds at 100° F., but at a test temperature of 60° F. the Universal viscosity ranges up to about 40 seconds. Of course, the best method of test for such materials is the kinematic method of the American Society for Testing Materials (D445-46T). The older Thermo method involves allowing the oil to rise in the stem or tube of the Saybolt Thermo Viscosimeter, recording the time and the temperature. The time (seconds) is multiplied by 10 and corrected by means of standard tables to the temperature of 60° F. The relationship between the several viscosities is indicated in Table 1, or by Equations 1 and 2.

$$S.T. = 15 + 148.5\ K \quad (1)$$

$$S.T. = 46\ U.S.S. - 1{,}183 \quad (2)$$

in which S.T. is Saybolt Thermo viscosity, K is kinematic viscosity in centistokes, and U.S.S. is Universal Saybolt seconds, all at 60° F.

TABLE 1

Relationship Between Saybolt Thermo Viscosity and Other Viscosity Units
(All at 60 F.)

Saybolt Thermo viscosity	Kinematic viscosity	Universal Saybolt
100	0.57	....
150	0.91	....
200	1.25	....
250	1.58	....
300	1.93	32.3
350	2.26	33.5
400	2.59	34.7
450	2.92	35.7
500	3.27	36.8
550	3.60	37.8
600	3.93	38.8
650	4.27	39.9
700	4.60	41.0

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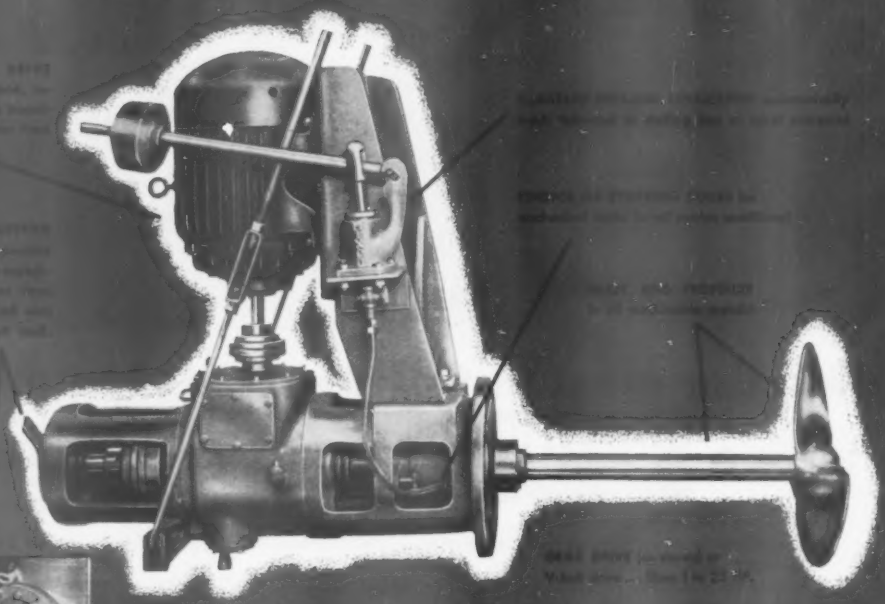

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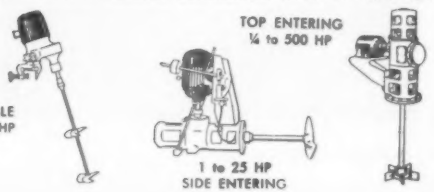

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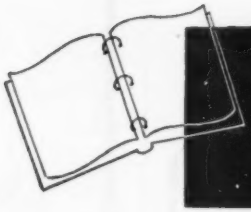

REFINER'S NOTEBOOK

ELECTRICAL INSTALLATIONS—6

Code Sealing Requirements

by B. Z. Segall*

A SECOND sealing requirement, for Class I, Division 1 location, specifies seals in each conduit of 2-in. size or larger entering an enclosure or fitting housing terminals, splices, or taps. Here again the maximum distance between the seal and the enclosure must not exceed 18-in. Fig. 1 illustrates this condition.

The third requirement specifies seals in all conduit runs leaving Class I, Division 1 areas. The sealing fitting must be designed and installed to prevent the passage of any gas or vapor from the Division 1 area through the seal or the conduit.

This is shown in Fig. 2. In the top seal, the gas or vapor will fill the lower box and also the vertical conduit leading into the nonhazardous or Division 2 area and feeding into this top seal. The gas or vapor cannot escape into this nonhazardous or Division 2 area since the seal effectively blocks off its escape into this area. If this top seal is placed within the hazardous area, the gas or vapor could accumulate in the air space above the seal and thus could seep out through the conduit line feeding from the top of this seal and eventually escape through some joint or opening in the nonhazardous or Division 2 area. A study of the lower seal will indicate its effectiveness as installed.

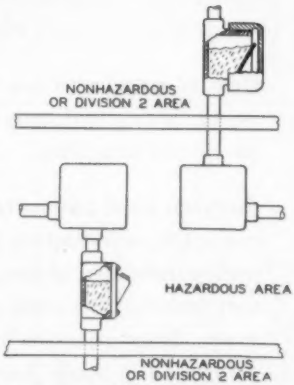

Fig. 2—Illustrating a third sealing requirement (for conduit runs leaving Class I, Division 1 areas).

This third requirement for sealing also states that the sealing fitting shall be installed at such a point in the conduit system so that the gas or vapor cannot leave the Division 1 area through a union, coupling, box or fitting installed between the seal and this point where the conduit leaves the Division 1 area. Fig. 3 illustrates this construction. A study of the two seals as indicated above for Fig. 2 will show why the seals effectively accomplish the sealing off of the gas or vapor from the nonhazardous or Division 2 area.

Class 1, Division 2 areas . . . Two requirements for sealing are set up. All conduit lines entering enclosures which are required to be explosionproof in this area must be sealed. The 18-in. maximum spacing requirement also applies. The conduit runs between the enclosures and the seals must conform to the wiring requirements for Division 1 areas. In other words, rigid conduit must be installed between the seal and the enclosure. Electrical metallic tubing may be installed beyond the seal.

The second requirement roughly corresponds to the third conditions set up for Division 1 areas in the above discussion. Each conduit line passing from a Division 2 area to a nonhazardous area must be sealed off. The sealing device must be placed as indicated for the Division 1 area in Figs. 2 and 3. Furthermore, rigid conduit must be installed between the sealing fitting and the point where it leaves the Division 2 area. Electrical metallic tubing may be installed beyond the seal.

* Consulting engineer, New Orleans.

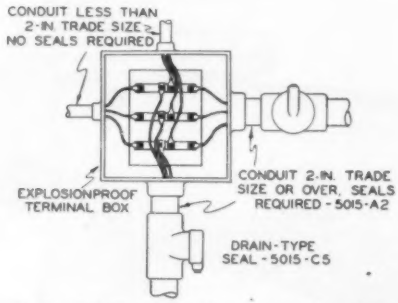

Fig. 1—Illustrating a second sealing requirement for Class I, Division 1 locations. (The first sealing requirement was discussed in the preceding installment.)

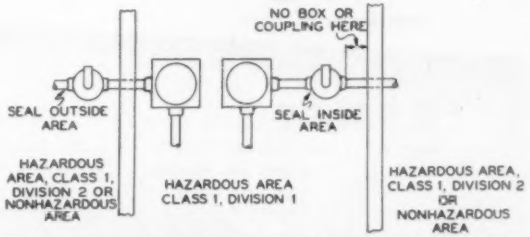

Fig. 3—Sealing requirements for Class I, Division 2 areas. (See also Fig. 2.)

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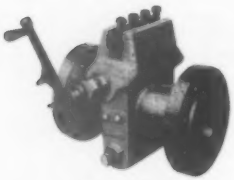

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Part 13 of a series

by Dr. B. E. Lauer, Head, Department of Chemical Engineering, University of Colorado

h_f HEAT TRANSFER

COEFFICIENT of HEAT TRANSFER through FILM between INSIDE SURFACE of COOL TUBE and WARM LIQUID

Tube Position: Vertical

Liquid Movement: Streamline Flow

Special Consideration: Filmwise liquid distribution.

EQUATION:

$$h_f = 55\left[\frac{k^2\rho^{5/3}c}{L\mu^{1/3}}\right]^{1/3}\left[\frac{4\Gamma}{\mu}\right]^{1/3}$$

TERMINOLOGY:

- h_f - Film coefficient of heat transfer, BTU/hr.sq.ft.°F.
- k - Thermal conductivity of liquid, BTU/hr. ft. °F.
- c - Specific heat of liquid, BTU/lb. °F.
- ρ - Density of liquid, lb./cu. ft.
- L - Length of tube, ft.
- μ - Viscosity of liquid at t_f, lb./ft. hr.
- Γ - Mass rate of flow from tube lb./hr. ft. of wetted perifere = $w/\pi D$
- D - Inside diameter, ft.
- w - Mass rate of flow/tube, lb./hr./tube.

LIMITATIONS:

Factor $\frac{4\Gamma}{\mu}$ must be under 2100

SOURCES OF DATA:

For physical constants for use in above equation see Chemical Engineers' Handbook, J. H. Perry (1948).

for ρ see pp. 130-148, 175-195, 1583.
μ see pp. 370-374, 1198, 1696.
k see pp. 459-461, 1303, 1697.
C see pp. 225-235, 297, 1688, 1696.

REFERENCES:

1. Chemical Engineers' Handbook, J. H. Perry, p. 471.
2. McAdams, Drew, and Bays (Trans. Am. Soc. Mech. Engrs.) 62, 627 (1940).

E 2 b (2)

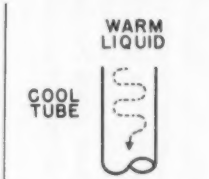
COEFFICIENT of HEAT TRANSFER through FILM between INSIDE SURFACE of a COOL TUBE and WARM LIQUID

Tube Position: Vertical

Liquid Movement: Turbulent

EQUATION:

$$h_f = 0.0265\,\frac{k}{D}\left[\frac{DV\rho}{\mu}\right]^{0.8}\left[\frac{c\mu}{k}\right]^{0.3}$$



TERMINOLOGY:

- h_f - Coefficient of heat transfer, BTU/hr. sq. ft. °F.
- D - Inside diameter of tube, ft.
- k - Thermal conductivity of liquid, BTU/hr. ft.^{2} °F./ft.
- V - Velocity of liquid, ft./hr.
- ρ - Density of liquid, lbs./ft.^{3}
- μ - Absolute viscosity of liquid, lbs./hr. ft.
- C - Specific heat of liquid, BTU/lb.°F.

LIMITATIONS:

Valid for liquids with Reynolds number $(DV\rho/\mu)$ as low as 2100, if Prandtl number $(c\mu/k)$ is less than 10. Otherwise it is valid only for Reynold's numbers greater than 10,000. Properties evaluated at average temperature of the liquid. Viscosity not greater than twice that of water.

SIMPLIFIED EQUATIONS:

For water:

$$h_f = 160\,\frac{(1+0.012\,t_f)(V_s)^{0.8}}{(12\,D)^{0.2}}$$

For oil:

$$h_f = 0.025\,\frac{V}{\mu^{0.43}}$$

V_s = Water velocity - ft./sec.

SOURCES OF DATA:

For physical constants for use in above equation see Chemical Engineers' Handbook - J. H. Perry (1948).

for ρ -- see pp. 130-148, 175-195, 1583.
μ -- see pp. 370-374, 1198, 1696.
k -- see pp. 459-461, 1303, 1697.
C -- see pp. 225-235, 297, 1688, 1696.

REFERENCES:

1. Univ. of Calif. Pub. Eng., Dittus and Boelter, Vol. 2, p. 443 (1930).
2. Chemical Engineers' Handbook, J. H. Perry, p. 470.
3. Elements of Heat Transfer and Insulation, Jakob and Hawkins, p. 113.
4. Heat Transmission, William H. McAdams, p. 168.
5. Applied Heat Transmission, H. J. Stoever, p. 57, p. 67.

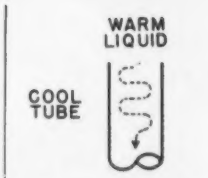
E 2 c (1) (a)

COEFFICIENT of HEAT TRANSFER through FILM between INSIDE SURFACE of COOL TUBE and WARM LIQUID

Tube Position: Vertical

Liquid Movement: Turbulent

Special Consideration: Highly viscous liquid.



EQUATION:

$$h_f = 0.027\,\frac{k}{D}\left[\frac{DV\rho}{\mu}\right]^{0.8}\left[\frac{c\mu}{k}\right]^{1/3}\left[\frac{\mu}{\mu_s}\right]^{0.14}$$

TERMINOLOGY:

- h_f - Film coefficient of heat transfer, BTU/hr.sq.ft.°F.
- k - Thermal conductivity of liquid, BTU/hr. sq. ft. °F./ft.
- D - Inside diameter of tube, ft.
- V - Velocity, ft./hr.
- ρ - Density of liquid, lb./cu. ft.
- μ - Viscosity of liquid, lb./ft. hr.
- C - Specific heat of liquid at constant pressure in BTU/lb. °F.
- μ_s - Viscosity of liquid at surface temperature, lb./ft. hr.

LIMITATIONS:

For liquids at least twice as viscous as water, and for Reynolds numbers $(DV\rho/\mu)$ above 10,000.

SOURCES OF DATA:

For physical constants for use in above equation see Chemical Engineers' Handbook - J. H. Perry (1948).

for ρ -- see pp. 130-148, 175-195, 1583.
μ -- see pp. 370-374, 1198, 1696.
k -- see pp. 459-461, 1303, 1697.
C -- see pp. 225-235, 297, 1688, 1696.

REFERENCES:

1. Elements of Heat Transfer and Insulation, Jakob and Hawkins, p. 114.
2. Heat Transmission, William H. McAdams, p. 168.

E 2 c (1) (b)

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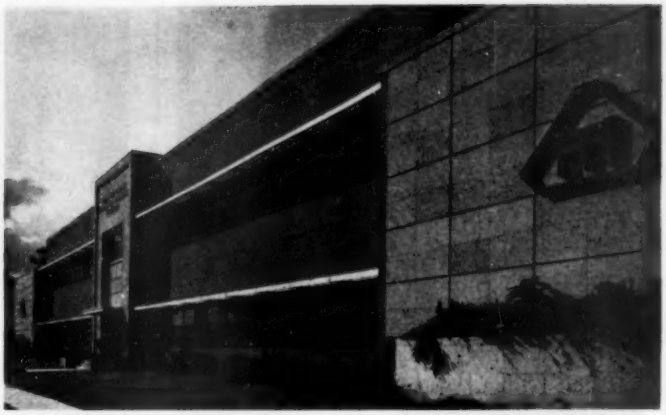
Hughes Laboratory Includes Field-Size Drilling Rig

DEVOTED to the present and future improvement of products, all the facilities of the new Research and Engineering Laboratory of Hughes Tool Co., Houston, are now in use. The laboratory, which adjoins the company's manufacturing-plant building, is 325 ft. long and 180 ft. deep with a total of 60,000 sq. ft. of space.

The laboratory, one of the most complete of its type serving any industry, consists of six sections, each devoted exclusively to research and each complete within itself. The sections are: drilling, product and product-part mechanical testing, metallographic, chemical, heat testing, and welding. A modern machine shop is part of the laboratory. Other facilities include staff offices, library, conference rooms, and dining room.

One of the interesting features is a complete field-size drilling rig with which tests duplicating field operating conditions are made. The framing for the rig and derrick foundation is isolated from the main building so that there is no vibration in the building when the rig is operating.

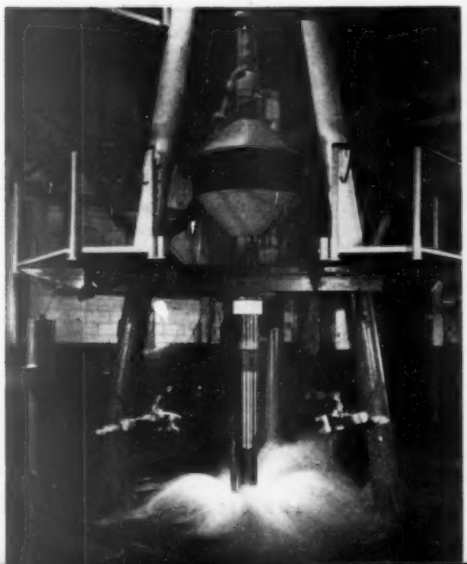
Ninety feet of the 118-ft. derrick extends above the roof of the build-



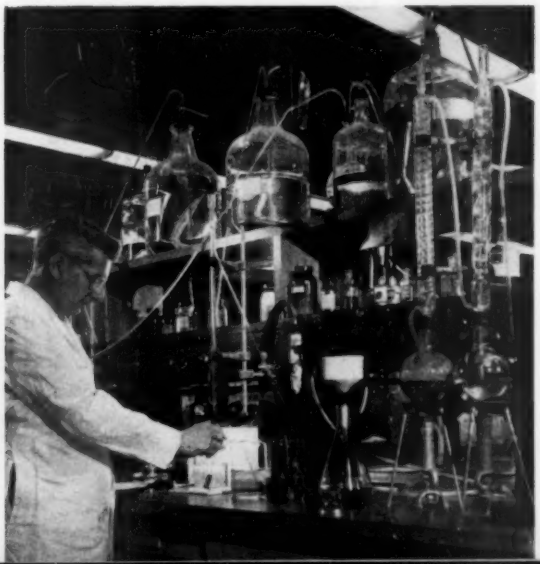
Front view of Research and Engineering Laboratory of Hughes Tool Co., Houston.

In charge of Hughes laboratory: Lyle Payne, assistant vice president, engineering; F. L. Scott, director of research; Paul Reeve, manager of engineering and administrative division; D. J. Martin, vice president, engineering; F. H. Berleth, director of engineering training, and R. W. Schlumpf, chief metallurgist.

Laboratory test rig used in the development of percussion drills. Hydraulic and electrical controlled, it is capable of applying up to 8,500-lb. bit load at rotary speeds up to 150 r.p.m. Here a time-displacement diagram is being made to determine the cyclic characteristics of a fluid-actuated percussion tool.



Titrating a boron solution with sodium hydroxide, using methyl red and phenolphthalein as internal indicators. Analysis of boron is routine in quality control of abrasion-resistant alloys made in Hughes' tool foundry. Other elements analyzed include silicon, chromium, manganese, cobalt, tungsten and iron.



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PETROLEUM SERVICE DIVISION

ing. The cellar is located at ground level 15 ft. beneath the rotary floor which is the ceiling of the laboratory. The operator observes and checks all phases of the drilling operation from a control booth.

In operation, drilling loads up to 100,000 lb. can be applied by a hydraulic pulldown yoke attached to the drill stem above the rotary table. It is designed so that rotational speeds up to 400 r.p.m. can be used in the drilling tests.

Large test rocks are selected which duplicate formations found in representative oil fields. Where necessary the test blocks are made synthetically so that they approximate a specific formation.

The drilling laboratory is also equipped to test all drilling methods and tools. Procedures have been perfected so that coring and other related tests duplicating field operations can be made.

In the chemical laboratory a specially designed direct-reading spectrometer is used as part of the analytical procedure. This section also includes a Hughes designed macro-etching installation. A wide range of photographic equipment is used including a high-speed camera capable of taking pictures at speeds of 3,000 frames per minute. This is used in reproducing the actual action of bits under drilling conditions.

The laboratory is fully equipped to make tests of metals and mechanical designs which have to do with the performance and service life of products. It has facilities to determine eight elements and to handle 200 samples daily.

In the welding laboratory experimental and testing work in hard facing and welding practices are carried on.

In organization the laboratory is divided into units, each of which handles a particular classification under a supervisor. These groups are:

1. Specialized mechanical and physical testing operations.
2. Metals group, responsible for conventional-type physical testing, heat treating, melting, metallography, and photography.
3. Chemical laboratory.
4. Welding laboratory.
5. Machine shop.

The laboratory building has several interesting features in design. Seismographic studies were made of the building site to determine vibration characteristics of the earth, and the building was designed to conform to those conditions. Special foundations were used to minimize all vibration with floating substructures to prevent heavy vibration in interior areas of the laboratory.

Tubing and Casing As Drill Pipe

(Continued from page 124)

180,000 lb. and the net pull on the fish at this depth would be 330,000 — 180,000, or 150,000 lb. With 4½-in. drill tubing, the net pull would be 254,000 — 108,000, or 146,000 lb.

Drill Tubing Maintenance and Depreciation Costs, Field C

Since the formations encountered in Field C are not excessively abrasive, present practice is to use hard-faced collars only on the 5½-in. size. Estimated drill tubing expense for a typical 7,000-ft. well drilled with 4½-in. drill tubing is shown in Table 7.

TABLE 7
Field C, Drill Tubing Maintenance and Depreciation

Maintenance cost:	
125 collars at $3.90	$500
Rig-time costs	250
(Change 125 collars at 3 minute per collar with rig time at $40 per hour)	
Recut threads and miscellaneous	100
Total	$850
Maintenance cost per foot of hole drilled	$0.122
Depreciation cost:	
Assuming 2,000 ft. of 4½-in. drill tubing can drill 90,000 ft. of hole and costs $2.16 per foot and has salvage value of 25 per cent.	
Depreciation cost per foot of hole drilled	$0.216
Total maintenance and depreciation per foot of hole drilled	$0.338

Drilling Speeds and Costs, Field C

All contract drilling strings in Field C are using conventional drill pipe and hoisting equipment. Because of the extreme complexity of stratigraphy and lack of uniformity of formations drilled by the wells, as well as variation in well programs, comparisons are difficult to show the relative advantage of drill pipe or drill tubing.

However, four wells were selected as being the most comparative of any available, two of which were drilled by Shell crews with 4½-in. drill tubing and two by contractor crews with 4½-in. drill pipe. In order to provide as close a comparison as possible, pertinent data for the four wells are shown in Table 8.

In Table 9 further adjustment of drilling time is made, first to deduct whipstocking time and second to adjust the days according to the amount of hard conglomerate and sand shown by electric log in each well. As a result, two sets of wells can be compared on a common basis.

From these tables it can be concluded that within the limits of accuracy of the survey, drilling time comparable to heavier rigs using drill pipe can be made by use of light rigs using drill tubing. However, because of the lower rigging-up and removal costs and the lower operating cost per day of the smaller rigs, total drilling costs have been less for the smaller rigs using drill tubing.

Reference

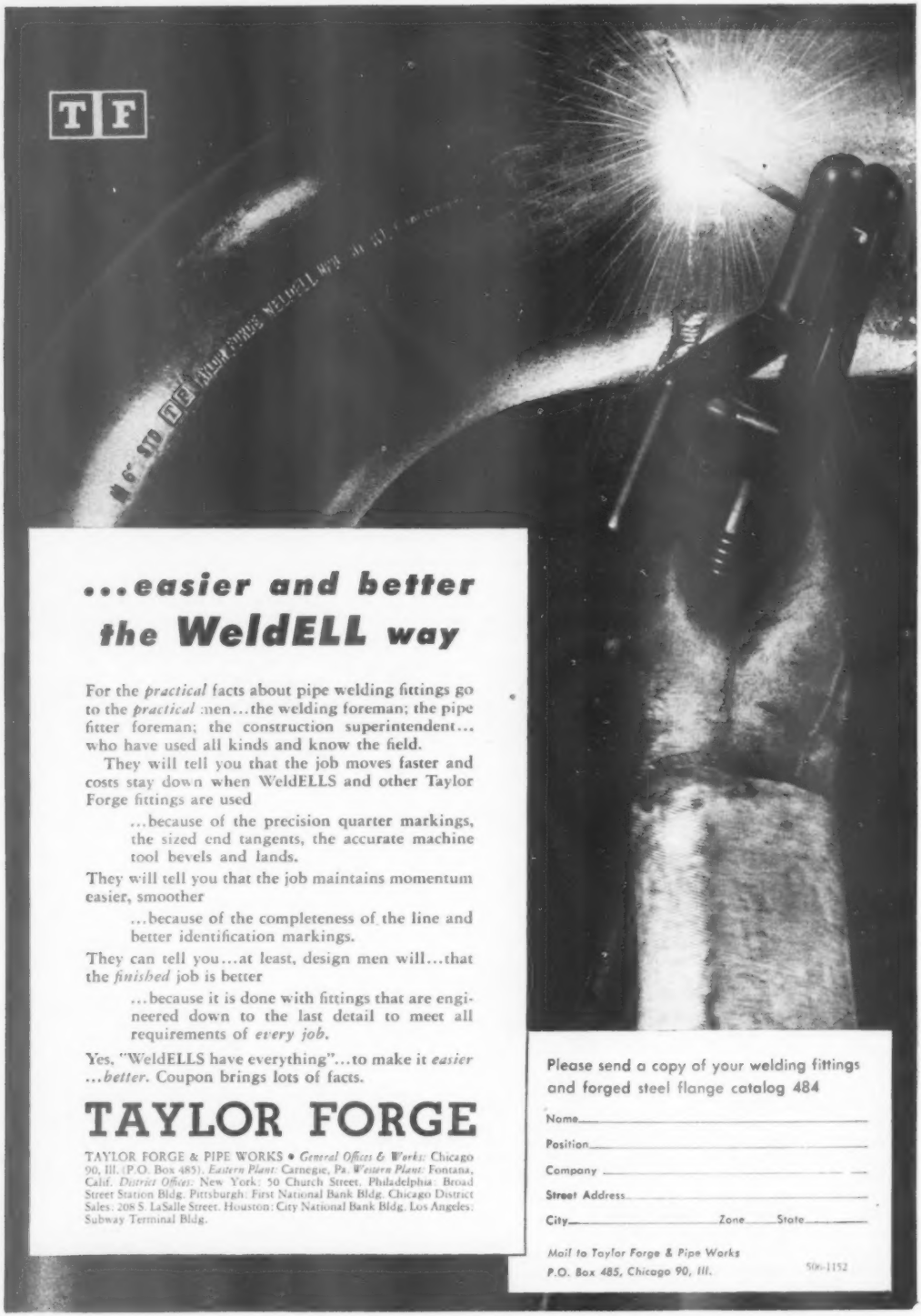
1. "The Use of Tubing as Drill Pipe," May 1950, by William F. Bates.

TABLE 8—FIELD C

Rig—	Well 1 Shell 4½-in. drill tubing	Well 2 Contract 4½-in. drill pipe	Well 3 Shell 4½-in. drill tubing	Well 4 Contract 4½-in. drill pipe
Depth, ft.	6,527	6,990	6,960	6,760
Days	51	50	53	74
Cores, ft.	43-279	24-165	2-20	46-796 (diamond coring)
Drill-stem tests	0	5	3	3
Bits	51	62	64	62
Whipstocks	1	2	1	2
Equipment	Waldrip 622	Natl. 50 126-ft. mast	Waldrip 622	Natl. 50 136-ft. derrick
D.S.T. time, days	0	3	3	3
Coring time, days	15	9	½	27
Comparison depth, ft.	6,527	6,527	6,760	6,760
Drilling and round-trip time (minus coring, testing, logs, cementing, etc.) to comparison depth, days	28	30	37	36

TABLE 9—FIELD C

Well	Drilled by	Comparison depth, ft.	Total days	Formation adjustment	Net days
1	Shell—drill tubing	6,527	27.5	0	27.5
2	Contract—drill pipe	6,527	27.5	2	25.5
3	Shell—drill tubing	6,760	35.5	3½	32.0
4	Contract—drill pipe	6,760	34.0	1	33.0



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TRADE LITERATURE

1 EMULSION TREATERS, a 48-page catalog, describes vertical type and horizontal type treaters with cutaway drawings. Heating charts, specifications and installation dimensions are given. *The Parkersburg Rig & Reel Co.*

2 CHEMICAL PORPORTIONING PUMPS is an attractive bulletin offering the latest information on heavy-duty Chem-O-Feeder, a small proportioning pump, available with one, two, or three measuring chambers for capacities up to 57 gal. per hour. Bulletin gives specifications and features together with many installation diagrams, and a list of chemicals fed. *%Proportioneers, Inc.%*

3 STANDARD AND HEAVY-DUTY SHOVELS. New four-color catalog describes construction and operational features of Model 75A and 75B shovels, and 75BT truck crane. Shovels have a ¾-yd. capacity in a standard and heavy-duty class, and truck crane is rated at 20 tons. Catalog points out the ability of 75's to hoist, swing, and travel simultaneously. *Gar Wood Industries, Inc.*

4 ELECTRICAL FURNACES FOR INDUSTRY, illustrates and describes induction furnaces, resistance-wire melting furnaces, and annealing and tempering furnaces for copper alloys, aluminum, cast iron, and other metals. Also described are annealing and hardening, drying, and glass and ceramic furnaces. *Russ Electric Furnace Co.*

5 ARTHUR D. LITTLE PRODUCTS AND SERVICES. This 2-color, 24-page brochure summarizes the company's work with production, handling and storage of liquefied gases. It also includes a description of a high field strength electromagnet and a review of our prototype development service. *Arthur D. Little, Inc.*

6 B & W SCRATCHERS AND CENTRALIZERS FOR A GOOD CEMENT JOB. This eight-page bulletin illustrates and describes latch-on centralizers, multiflex, hinged nu-coil, and rotating scratchers, wall-cleaning guides, and oil-well gravel packing. A centralizer selection chart is shown, and typical installation photos are included on each item described. *B & W, Inc.*

7 NEW "GRIPPER" SLING CATALOG and price list includes 15 pages of complete data on three major specifications to which the slings are made, information on recommended uses and loading data, and full listings of prices for standard sizes. *The Cambridge Wire Cloth Co.*

8 THE HORTONSPHERE, an eight-page booklet, describes advantages of storing highly volatile liquids and gases in Hortonspheres under pressure. Tables of sizes are included in the booklet. These vessels range in capacity from 1,000 to 30,000 bbl. for oper-

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ating pressures of about 30 to 215 psi. and vessels for gas storage are designed in standard sizes from 32 to 80 ft. in diameter for operating pressures of 30 to 150 psi. *Chicago Bridge & Iron Co.*

9 PRESEALED INSULATED PIPE, a four-page bulletin, covers underground and weather-exposed piping systems conveying hot or cold liquids or gases. Steam pressures up to 1,000 psi. Bulletin gives applications, special features, design, construction, fabrication, and specifications. *Durant Insulated Pipe Co.*

10 FACTS AND FIGURES ON THREE POWERFUL X-RAY TOOLS FOR NONDESTRUCTIVE ANALYSIS is a new eight-page booklet consisting of diagrams used to show principles of operation for the three instruments; data are given on recommended fields of application, and results to be obtained are explained. *North American Philips Co., Inc.*

11 BRONCO 60 CERTIFIED flexible portable electrical cords and cables are described in a six-page multicolored brochure. This product features an oil-resistant Neoprene jacket. Data chart shows the most widely used types and sizes of Bronco 60 Certified cords and cables. *Western Insulated Wire Co.*

12 GRADIATION HEATER FOR THE PETROLEUM REFINING INDUSTRY. Bulletin S-6.2-2, a 16-page multicolored brochure, describes the application and advantages of the gradiation heater in crude distillation, vacuum distillation, petroleum vaporization, and thermal cracking. Performance charts, engineers' drawings, and schematic charts describe operating control, mechanical design and fuel economy. *Selas Corp. of America.*

13 OIL-FIELD CHAIN. Bulletin No. 52-3 describes in detail assembly riveted roller chain, easy to take apart and assemble. A graphic section shows how the chain is made up to any length. Features of the chain and exclusive Baldwin-Rex single pin coupler link are illustrated and described. Assembly diagrams and charts for all size chains are presented as well as list prices and boxed assembly specifications. *Baldwin-Duckworth Div., Chain Belt Co.*

14 STUDYING THE INSTALLATION is an eight-page article written by William E. Bakewell, chief field engineer for Viking Pump Co., which contains information on problems of pump installation. Featured in the article are topics such as viscosity, pipe friction, suction lifts, and horsepower, with accompanying charts and tables. *Viking Pump Co.*

15 OIL-FIELD AND PIPE-LINE EQUIPMENT is a new 20-page well-illustrated bulletin on equipment for generation, transmission, distribution, and utilization of electric power in oil-field and pipe-line applications. It briefly discusses operational problems of deep-well drilling and oil-well and pipe-line pumping. Also included are charts, tables, graphs, and product photographs to aid in selecting proper motors, control, transformers, and switchgear. *General Electric Co.*

16 HANDY GUIDE TO SELECTION OF CENTRIFUGAL PUMPS. This 12-page brochure, in addition to covering general purpose, double suction, multistage, special-purpose, and mixed and axial flow pumps, gives head-capacity table for single-stage, double-suction a.c. pumps. *Allis-Chalmers Manufacturing Co.*

17 CLEVELANDS—AT WORK, a multicolored pamphlet, contains "on-the-job" studies illustrating money-saving results of 40 years of specialized know-how in the worm-gear speed-reducer business. Cleveland units are shown powering equipment in such diverse industries as steel mills and refineries. *The Cleveland Worm & Gear Co.*

18 SIMPLICITY MEANS. A multicolored dossier describes the simplicity of operation and maintenance of chart installation, pen filling, and speed changes of the new Model 67001 potentiometer. The bulletin is so designed as to take the reader step-by-step through the chart frame, the main frame, and special features within the instrument assembly. *Western Electrical Instrument Corp.*

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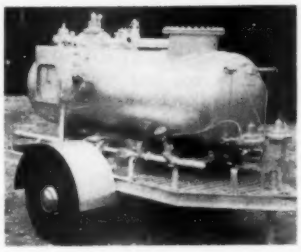
OIL AND GAS EQUIPMENT Digest

IT'S NEW CHECK IT

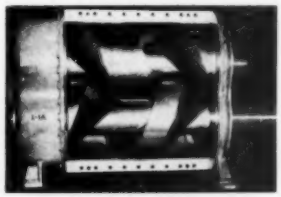
by Dan B. Miller

19 OIL-WATER-GAS METERING SEPARATOR. Oil, gas, and water entering the unit are tangentially discharged into a centrifugal separating ring which transforms some of the energy of the entering well stream into centrifugal force which is utilized in separating gas from liquid and water from oil and emulsion. Gas rises from the top of the separator ring and travels horizontally through the top opening in the quieting baffle to the gas outlet. Pressure is maintained on the vessel by a bottle-tight gas regulator installed in the gas outlet. Oil, water, and emulsion flow from the bottom of the separating ring into the rear chamber. Oil and emulsion, lighter than water, flow horizontally through the middle opening in the quieting baffle into the large settling section. In the settling section, emulsified water droplets are further coalesced and the resulting free water and oil are separated by gravity. Oil and emulsion flow horizontally toward the lower side of the front baffle. The cleaned oil spills over into the oil collecting chamber. Free water entering the rear chamber from the centrifugal separating ring flows under the bottom of the quieting baffle into the settling chamber. Water dropped or knocked out of emulsion, along with the free water, then flows horizontally to the water-siphon inlet through the bottom of the front baffle. Oil is discharged from the bottom of the oil-collecting chamber through the oil meter where flow is indicated. Similarly, water is discharged from the bottom of the water-collecting chamber through a meter and recorded. Water and oil may then be flowed to storage separately or recombined. Gas is discharged through an orifice plate holder where gas flow is measured. Gas may be taken off separately or recombined with the oil or oil and water. *Sivalls Tanks, Inc.*



IT'S NEW CHECK IT

20 SPIRAXIAL COMPRESSOR. Instead of conventional rotors, unit employs two intermeshing screw-rotors which rotate in opposite directions. These screws are operated by gears synchronized to prevent contact, allowing close but definite clearances between them. The Spirotors are formed along a spiral surface accurately generated to maintain correct clearances. The flow of air or gas is axial, with most of the compression taking place at the back of the casing. This allows an extremely large inlet opening, thus preventing strangulation of the inlet air and increasing volumetric efficiency. The Spiraxial Compressor is designed to increase the flexibility of the R-C Dualability line by bridging the gap between the conventional rotary positive and centrifugal compressors. Peak efficiencies at discharge pressure are determined by requirements. No internal lubrication is used or needed. *Roots-Connersville Blower.*



IT'S NEW CHECK IT

21 PRESSURE TRANSMITTER is used with pneumatically operated instruments for measuring the pressure of liquids and gases where a positive seal is needed between the gaging system and the fluid measured. It can be used with practically any fluid, including acids, alkalis, and solvents. This pressure transmitted includes a diaphragm that is exposed to the fluid to be measured. The pressure of the fluid on the outer side of the diaphragm is continuously and automatically balanced by the pressure of air supplied to the inner side; this air pressure is transmitted through a pipe or tube to the receiver. Various types of receivers can be used, such as hydrostatic gages, manometers, or pneumatically actuated recorders; two or more receivers can be used with the same transmitter. When used in liquid-level measurement, the receiver can be graduated to show the depth,

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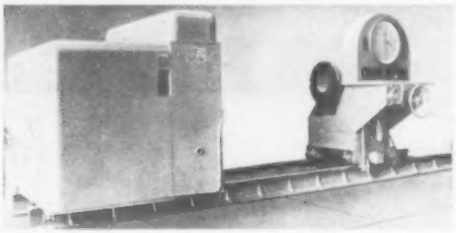
weight, or volume of liquid in vented or pressureized tanks. The transmitter is available with flange mounting, for use with the diaphragm inside the tank, and with a union connection for use with the diaphragm outside the tank. *King Engineering Corp.*

IT'S NEW CHECK IT

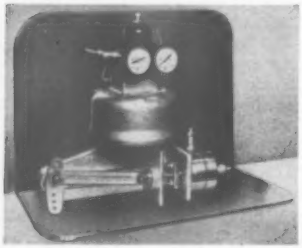
22 A NEW TORSION MACHINE is for the testing of tool joints on drill pipe. The machine measures torque in either direction of twist and has two open chucks which permit running any length and size of drill pipe through the machine. The machine is to be used solely for screwing up and unscrewing tool joints as is done on rotary drilling rigs when hoisting the drill stem and returning it



into the well. Capacity of the machine is 600,000 in.-lb. in either direction with 500 in.-lb. graduations on the indicator dial. A lower range of 120,000 in.-lb. is indicated by 100 in.-lb. graduations. Torque is applied in two speed ranges: from 1 to 6 r.p.m. for screw-up approach and from 0 to 1 r.p.m. for bucking up the tool joint. A slipping clutch is provided because of the rapid load rise when shoulders of the joint meet. Distance between chucks may be set anywhere between 4 and 100 in. by moving the control and indicator cabinet on its track. *Baldwin-Lima-Hamilton Corp.*

IT'S NEW CHECK IT

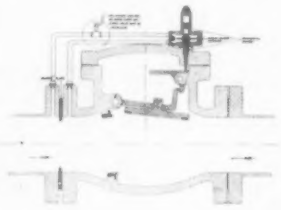
23 WEE WILLIE HIGH-PRESSURE, LOW-FLOW CONTROL VALVE. This valve is pneumatically controlled and is specifically adapted to pilot-plant operation. Standard models are available with working pressure ranges of 10,000 and 30,000 psi. with special assemblies up to 50,000 psi. Sizes range from ⅛ through ½ in. with screw, welding, Superpressure, and Autoclave end connections available. A simple combination



of four interchangeable plugs and two seat rings provides a Cv selection of values from .0016 to 1.00. Flow characteristics are normally linear. The Annin Domotor piston-actuated operator, combined with a multiplying mechanism develops thrust forces up to 6,000 lb. to positively and accurately position the valve plug against the extreme forces of off-balance and packing friction which develop in the high-pressure field. The assembly features travel limit stops with built-in reversing arrangement for changing from air-to-open and air-to-close. Basic valve body material is 304, 316, or 347, stainless steel with D-20 Nickel, Monel, Hastelloy, or any of the other available alloys on special order. *Annin Co.*

IT'S NEW CHECK IT

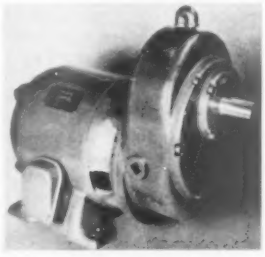
24 SENTRY BALANCED DIAPHRAGM EXCESS FLOW SHUT-OFF VALVE. The Sentry model actuates instantly as abnormal pressures become apparent, yet introduces no pressure drop into the line. A valve of the same nominal size as the line itself may be used. By variation in orifice sizes and spring adjustments, normal and emergency flow controls may be varied over a wide range. Installation is similar to that of any



conventional fitting of the same size. Orifices and downstream taps may be installed at considerable distance from the valve, depending upon the nature of the fluid under control. Once shut-off has been effected, the valve cannot open by itself, nor can it be opened until upstream pressure is reduced or pressures are equalized. Resetting is accomplished merely by turning the valve-shaft until the latch is reengaged. *McRae Valve Corp.*

IT'S NEW CHECK IT

25 LIFELINER SINGLE-REDUCTION GEAR-MOTOR. This gearmotor meets the mounting limitation requirements peculiar to side-entry agitators and mixers, and is suitable for light-duty coupled service applications such as fans and pumps. It is available in ratings from 1 to 30 hp., 780 to 420 r.p.m., AGMA Classes I and II. By using reduction gears, gearmotors have the advantage of being able to deliver power at speeds comparble to slow-speed motors while utilizing smaller and more efficient high-speed motors. *Westinghouse Electric Corp.*



IT'S NEW CHECK IT

26 NEW AIR OR GAS-POWERED PUMP has been designed for high-pressure chemical injection in refineries, oil fields, and chemical plants, and for low-pressure oil well slugging. Designed with 3/16-in. plungers, this pump will pump from one-half pint to 50 gal. per day against pressures up to 19,000 psi. With ¾-in. plungers, it will pump 34 gal. per hour against 1,400-lb. pressure. Constructed with chemical ends compounded to pump a single fluid, the ends can be individually connected and

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TO REDUCE SILICATE SWELLING—Ask for *Dowell XM Acid* . . . contains chemicals to speed well clean-up. It reduces swelling of silicates found in clay minerals, a problem often encountered in acidizing treatments.

TO PREVENT EMULSIONS—Ask for *Dowell XW Acid* . . . contains an agent to help prevent the formation of emulsions and to aid in breaking emulsions which have already been formed.

TO INCREASE PENETRATING ABILITY—Ask for *Dowell XF Acid* . . . contains surface tension reducing agents to increase penetrating ability of the acid. Aids return of spent acid and permits treatment of relatively fine pores.

TO REMOVE "GYP"—Ask for *Dowell XG Acid* . . . contains a foaming agent to use in removal of "gyp" from tubing or face of pay zones.

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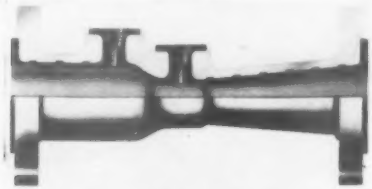
adjusted to pump different chemicals at different rates. With 3-in. power cylinders, plunger stroke is adjustable from 0 to 1 in. Maximum air or gas consumption is approximately 13 cu. ft. per minute. A 5-gal. stainless steel chemical tank with measuring tape can be unitized with this pump if desired. *McFarland Engineering & Pump Co.*

IT'S NEW CHECK IT

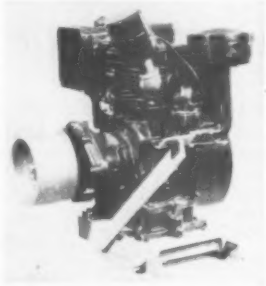
27 NEW SARAN LINED VENTURI NOZZLE. This nozzle is a Venturi styled differential producer for use in metering and controlling flow of corrosive fluids.



Saran has been thoroughly tested for corrosion resistance. The Saran lined differential producer allows wider use of continuous processes instead of batch processes. Such chemicals as sulfuric acid, nitric acid, ethyl alcohol, and other solvents, including oils, can be metered with assurance against corrosion. *Builders-Providence, Inc.*

IT'S NEW CHECK IT

28 ALL-WEATHER FRICTION-TYPE HORIZONTAL ENGINE STARTER is designed in the most compact arrangement possible and to be of the utmost convenience to the operator. The small engine shown here is placed in such a position that the friction pulley is directly under the right fly wheel of the horizontal engine. With the small engine running, the friction pulley is engaged by pressing down on the foot pedal. Exclusive features include: waterproofing for all kinds of weather; rubber-coated O.D. friction pulley; and positive engagement. Foot pedal raises the entire engine so friction pulley makes square contact. Built-in reduction gear does away with jack shaft, V-belt drive, and belt guard. *Bos-Co Equipment Engineering Manufacturing Co.*



IT'S NEW CHECK IT

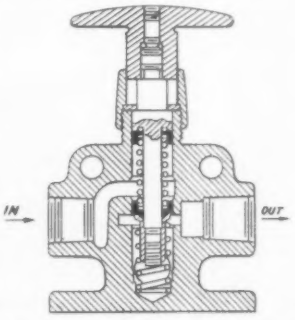
29 LIQUID RECORDING GRAVITOMETER. The new unit is used for indicating and recording the specific gravity or density of liquids, and especially flowing liquids. which may be subjected to high pressures and to changes in temperatures. The instrument is for recording continuously the specific gravity of liquids such as petroleum products, wherein the liquids may be under pressure as high as 1,000 psi. and subjected to temperature variations throughout a range of approximately 0° to 150°. It provides a unitary device for recording the specific gravity of liquids. The Gravitometer requires no auxiliary power source other than a spring-wound motor that is contained in the recorder case. *Refinery Supply Co.*

IT'S NEW CHECK IT

30 TWO NEW LINES OF PLASTIC PIPE. Everlite, a flexible pipe designed for nearly any cold-water use, is made entirely of virgin polyethylene. Everlite is distinguished by its gray color and precision-smooth interior. Clear-Vu, a transparent, rigid pipe, is made of virgin butyrate only. It is excellent for transmission of liquids when visual inspection is desired. Typical uses include: commercial water-distributing systems, gas and oil distributing lines, and oil-field waste and salt-water disposal. Everlite comes in 10 sizes from ½ to 6-in. diameter. It is recommended for use in a temperature range of −40° to +140° F. Everlite is supplied in coils with standard lengths ranging from 500 ft. for the ½-in. size down to 25 ft. for the 6-in. size. This long length plus the light weight and flexibility insure quick, easy and economical installations. *Bettis Corp.*

IT'S NEW CHECK IT

31 PILOT AIR VALVES. Known as the Series 3000, they are used for remote control of pilot-pressure-operated 4-way air valves, and can be used for remote control of air-pilot hydraulic valves. These new pilot valves can also be substituted for direct-control valves in such installations where a ¼-in. 3-way air valve is indicated. Operating the valve allows air to flow to the "out" port. A spring returns the valve to its original position, blocking the air supply, and bleeding the "out" port. Six types of operation are available. The palm button, push button, and cam are offered in both side and foot mountings. The foot and solenoid types are offered only in foot mountings. *Rivett Lathe & Grinder, Inc.*



IT'S NEW CHECK IT

32 MSA EXPLOSIMETER, MODEL 2, A PORTABLE INSTRUMENT is for use in detecting hazardous gas or vapor-air atmospheres. A special filter cartridge, incorporating a chemical reagent used with the instrument when sampling leaded gasoline vapor, is also listed. Provided with this light, compact instrument, powered by flashlight batteries, is a sampling line of synthetic rubber, recommended for use in remote sampling of atmospheres which may be explosive. *Mine Safety Appliance Co.*

PIPE LINES

Plantation Gets Clearance For $7,900,000 Expansion

WASHINGTON. — Plantation Pipe Line Co.'s plans to increase capacity of its products pipe line from Baton Rouge, La., to Greensboro, N. C., have been approved by the Petroleum Administration for Defense and the Defense Production Administration.

Major expenditure in Plantation's $7,900,000 program will be for the construction of an 82-mile, 14-in. line paralleling the present 10-in. line from Charlotte, N. C., to Greensboro.

The company also will install new tankage at Baton Rouge, Helena, Ala., and Bremen, Ga. New pumping units will be installed on the 18-in. line from Baton Rouge to Bremen, and booster stations added between Bremen and Charlotte.

DPA has allowed 5-year accelerated amortization on the entire project, granting quick writeoff on 40 per cent of $2,190,000 and 25 per cent of $5,784,000 of the cost.

Cities Service to Boost Capacity to Kansas City

WASHINGTON.—Cities Service Gas Co. will begin construction soon to boost capacity of its 26-in. transmission line from Hugoton gas field in Kansas City, Mo., by 56,000,000 cu. ft. daily.

The company obtained approval of the Federal Power Commission November 14 to install 11,400 hp. at one existing and one new compressor station on the line.

The $2,781,000 project involves adding three 1,600-hp. units at the company's Greensburg station in Kiowa County and six 1,100-hp. units at a new station in Harvey County.

The additional capacity, Cities Service says, will be used to meet additional peak-day requirements.

East Tennessee to Extend Gas System to Kingsport

WASHINGTON. — East Tennessee Natural Gas Co., Knoxville, Tenn., has received permission of the Federal Power Commission to lay 100 miles of natural-gas-transmission line from near Knoxville, to the Kingsport, Tenn., area.

The $5,800,000 project also will involve construction of about 58 miles of various-sized lateral lines. The new facilities will serve Morristown, Johnson City, Elizabethton, Bristol, Greensville, and Kingsport, Tenn.

Permission to lay a 5½ mile lateral to Jefferson City, Tenn., was withheld by the commission due to insufficient evidence on the proposed market.

The authorization was conditioned to require that East Tennessee submit a plan of financing prior to the start of construction and within 90 days of the issuance of the certificate. The company also must file a rate schedule satisfactory to FPC not less than 60 days prior to commencement of service

Eastern End of West Coast Line Now Set for Midland

CHICAGO.—L. M. Glasco, president of West Coast Pipe Line Co., said the company now intends to originate its proposed West Texas-to-California crude line at Midland, Tex., instead of Wink, Tex.

Midland is about 75 miles east of Wink. Glasco gave no explanation for the change.

He also said that West Coast plans to ship 15,000 bbl. of natural gasoline per day through the line 1,000-mile, 24-in. to the Los Angeles basin. The big line now has crude commitments at both ends of the line to handle 40,000 bbl. daily, he said, and added that he is confident that sufficient commitments would be obtained to operate the project.

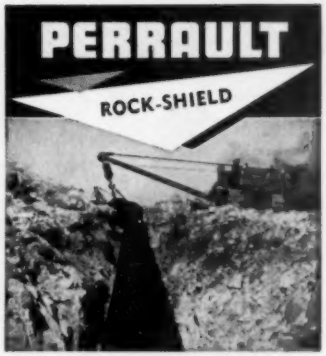
Contemplated tariff rates for moving crude through the line are 60 cents per barrel for 75,000 bbl. daily or less, 40 cents per barrel for the 150,000 to 175,000 bbl., and 37.5 cents for more than 175,000 bbl. daily.

Barge Operators to Protest U. S. Pipe Line Contracts

WASHINGTON. — Oil-barge operators are preparing to protest the legality of United States Pipe Line Co.'s proposed, guaranteed-tender contracts for its projected products line from Beaumont, Tex., to Newark, N. J.

The operators have held preliminary talks with officials of the Department of Justice, which recently informed United States Pipe Line that it had no present objections to the guaranteed-tender type of contract *(The Oil and Gas Journal, November 17, page 249)*.

David Ginsberg, attorney for the



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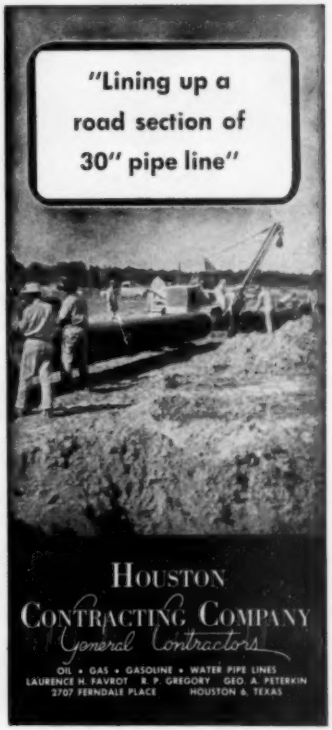
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barge operators, said his group would protest U. S. Pipe Line's proposal to the Department of Justice, the Petroleum Administration for Defense, the Interstate Commerce Commission, and the Reconstruction Finance Corp. should the company turn to it for financing.

Continental Pipe Line Buys Sunray Coastal Crude Line

HOUSTON.—Continental Pipe Line Co. has announced the purchase of a 27-mile, 4-in. crude-oil pipe line in Louisiana from Sunray Coastal Pipe Line Co.

The line, extending directly south from Longville, Beauregard Parish, will be used to transport crude oil from surrounding fields to Continental's Lake Charles refinery, currently undergoing a $27,000,000 expansion.

The line will begin transportation of oil on December 31. The pipe line company is a subsidiary of Continental Oil Co.

FPC Approves Installation Of New Station in Arkansas

WASHINGTON. — The Arkansas Louisiana Gas Co., Shreveport, has been granted temporary authorization of the Federal Power Commission to build and operate a 7,500-hp. compressor station in Clark County, Arkansas.

The $2,147,470 station will boost pressure on the company's Line S from Waskom, Tex., to Perla, Ark. It is designed to make available substantially greater volumes of gas to existing customers in the central region of Arkansas.

Company spokesmen said that installation of the station will reduce peak-day curtailments of service in Arkansas by about 40,000,000 cu. ft. of gas daily.

Texas-Ohio Officials Meet To Determine Future Action

HOUSTON. — Directors of Texas-Ohio Gas Co. were scheduled to meet late last week to decide what to do next.

The companies application to lay a $185,000,000 gas-transmission line from the Mexican border in Hidalgo County, Texas, to near Lancaster, Ohio, was turned down 2 weeks ago by the Federal Power Commission (*The Oil and Gas Journal, November 17, page 439*).

It is believed that the company may file for a rehearing of the application and take the case to court action if this move fails.

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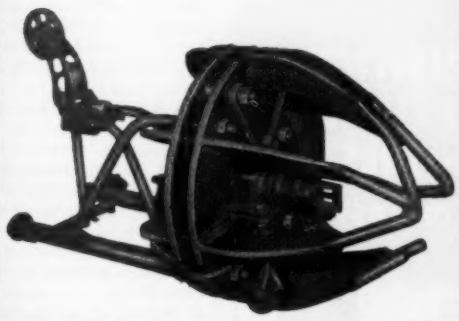

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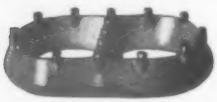

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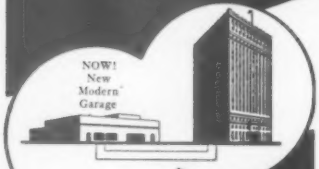

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Among the Drilling Contractors

Louisiana Contractor Drilling in Quebec

Circle Drilling Co., Lake Charles, La., is starting its initial test on a drilling contract it has with New Peninsular Oil, Ltd., involving a development program the latter company is undertaking on Gaspe Peninsula, in Quebec Province, eastern Canada. Location of the area is approximately 60 miles from the town of Gaspe, operating headquarters.

Work also is under way on deepening an old test in the area which was drilled by another company in an attempt to explore the potentialities of what is supposed to be a Silurian reef. The hole, in which operations had been suspended at 5,000 ft., will be carried to between 6,000 and 7,000 ft.

Texas Firm in Nebraska

Delaware Drillers, Inc., San Angelo, Tex., has established a division office at Sidney, Neb., for its contracting and development operations in the Denver-Julesburg basin of western Nebraska and eastern Colorado. C. J. Bryce, formerly located at San Angelo, is superintendent in charge.

Kemp Drilling Co., Shreveport, is handling the contract on Humble Oil & Refining Co.'s new 7,500-ft. Wilcox test at Washout Bayou, in southwestern Adams County, Mississippi. The new operation is designated as 1-D Breaux et al. Location is in 10-4n-4w.

Peterson Drilling Co., Shreveport, has been awarded the contract for a 5,000-ft. Wilcox test to be drilled for Urban B. Hughes and Smith County Oil Co. on the flank of the Kola salt dome, 2 miles east of Collins, in Covington County, Mississippi. Location is in 22-8n-15w.

Tucker Drilling Co., San Angelo, Tex., has the contract to drill A. W. Head and John L. Welsh, Jr., 1 B. H. Boyd, Schleicher County, Texas, wildcat, located 32 miles northeast of Eldorado, in 15-H-GH&SA Survey.

F. J. Fahle, cable-tool contractor, Bellefontaine, Ohio, is drilling his second hole for the recently organized Tip Top Oil Co. His 3,500-ft. rig now is on a location on the operator's Shields lease in Section 9932, McArthur Township, Logan County, Ohio. The new location is 3 miles northeast of the first hole, lately completed as dry at 2,292 ft.

New Drilling Company Operates in Arkansas

Smackover Drilling Co., Inc., is a newly organized drilling contracting company headquartering at El Dorado, Ark. Principal owners are Robert E. Adair of El Dorado, formerly associated with American Liberty Oil Co. and Glasscock Drilling Co., president; and Leo D. Recknagel, Shreveport, formerly with Sohio Petroleum Co. and Peterson Drilling Co., vice president.

The new company is starting with two rotary rigs, and for the time being is concentrating its operations to southern Arkansas and northern Louisiana.

DPL Co., Inc., San Angelo, Tex., has moved a rig to a location 20 miles east of Dothan, Ala., to drill the first of two 7,000-ft. wildcats contracted for the Southeastern Operators Committee.

Rogers-Fain Drilling Co., Oklahoma City, is starting a 3,500-ft. Springer test 2 miles west of the North Gotebo field, northern Kiowa County, Oklahoma. Operators are J. N. Ingram and associates. Well is 1 Osmond, in the NW NW SE 4-7n-16w.

Fleet Drilling Co., Ada, Okla., has contracted with Jay Simmons of Dallas for a 10,500-ft. wildcat test to be drilled 4 miles northeast of Blanchard, in McClain County, Oklahoma. Location is for 1 Roy Wilson, in the SE SE SE 14-8n-4w.

Eason Oil Co., Oklahoma City, is drilling on a contract with D. F. O'Rourke, also of Oklahoma City, at a wildcat location 2 miles north of the Northwest Evansville pool, Logan County, Oklahoma. Well is 1 Ferguson estate, in the SE SE NW 23-16n-1w.

John W. Moore, Utah drilling contractor, has a rig working for Russell D. Garner and associates at a newly started exploratory test on the Section Ridge anticline, 15 miles northeast of Vernal, Uintah County, northeastern Utah. Hole is projected to the Weber

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sand, productive horizon of the Rangely field to the east in northwestern Colorado, and the Ashley Valley field to the west.

Wise Drilling Co., Tyler, Tex., is drilling for Watburn Oil Co. at 1 Pollard, a projected 6,700-ft. wildcat test located 8 miles south of Winnsboro, in Wood County, eastern Texas.

Herndon Drilling Co., Tulsa, has a rig running on a projected 6,000-ft. wildcat test in Yell County, Arkansas. The test, a contract job for B & G Oil Co., Inc., is 1 Mitchell with location in the C NW NE 16-5n-24w, north of Chalybeate Springs.

Greyhound Drilling Co., El Dorado, Ark., is contractor on a Paleozoic wildcat test which Oil & Gas Development Associates are starting at 1 Warfield, in Phillips County, Arkansas. Projected depth is 4,650 ft.

Loffland Brothers Co., Tulsa, is the contractor for Arkansas Fuel Oil Co. on a projected 12,500-ft. wildcat test being started 3½ miles northwest of the Napoleonville townsite, in Assumption Parish, Coastal Louisiana. Location is for 1 Brownell-Kidd, in 27-12s-12e.

Colorado-Wyoming Drilling Co. is the contractor on a wildcat test which Sherrod & Apperson are starting at 1 State, in the C NE SE 16-4n-60w, 12 miles southeast of the Greasewood pool, in Morgan County, Colorado.

Lowell & Daniels, Denver, will drill for General Petrolcum Co. at 63-8 Government, a projected Wasatch test on the Yellow Creek unit, 10 miles northwest of Piceance Creek, in Rio Blanco County, northwestern Colorado. Location is in 8-1n-98w.

ACTIVE ROTARY RIGS*

(United States and Western Canada)

	Week ended	Change week ended	
Area	11-17-52	11-10-52	11-19-51
Gulf Coast	609	+11	− 42
N. & W. Tex.-N. M.	856	+15	−195
Ark.-N. La.-E. Tex.	144	+ 1	− 44
Oklahoma	328	+ 9	− 20
Kansas-S. Nebraska	185	+10	− 11
Illinois-Eastern	145	− 1	0
Rocky Mountains	240	+ 4	+ 41
Pacific Coast	169	0	− 6
Total U.S.	2,676	+49	−277
Western Canada	187	+ 8	+ 24
Total	2,863	+57	−253

*Courtesy Hughes Tool Co. Trends in drilling activity in the United States and the Gulf Coast and Arkansas-North Louisiana-East Texas areas are shown on pages 184 and 185.

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REFINING

Goodrich - Gulf to Construct Petrochem Plant at Orange

ORANGE, Tex. — Goodrich - Gulf Chemicals, Inc., a new firm organized by Gulf Oil Corp. and B. F. Goodrich Co., will build a multimillion-dollar petrochemical plant here, a Gulf spokesman said last week.

Plant size and type of products which will be produced have not yet been disclosed. The new company has purchased a 701-acre site on the Sabine River.

Gulf Oil Corp. has an ethylene plant nearing completion at nearby Port Arthur and an ethylene pipe line running to Orange. Although no products definitely have been decided upon, it is reported probable that the ethylene would figure largely as a raw material.

Ethylene is one of the foremost building blocks in the synthesis of petrochemicals. The Gulf man said that the products of the plant would not necessarily be new or "exclusive" to the petrochemical industry and this statement substantiates the likelihood that ethylene will be one of the chief raw materials. Ethylene can be used to produce a wide variety of petrochemicals such as ethylene glycol anti-freeze, ethyl alcohol, and the widely used polyethylene plastics.

The 50-50 arrangement between Goodrich and Gulf is expected to provide the infant organization with the combined know-how, research background, and marketing knowledge of the parent concerns. W. S. Richardson, executive vice president of B. F. Goodrich, Akron, has been named president of Goodrich-Gulf.

Celanese Begins Production At New Pampa, Tex., Plant

PAMPA, Tex. — Celanese Corp. of America has begun production at its new $17,000,000 petrochemical plant here.

R. M. KixMiller, general manager of the company's chemical division, said last week that the first chemicals produced will be acetic acid and acetic anhydride. The chemicals are being manufactured from liquefied petroleum gases coming from the Texas Panhandle. An entirely new process is being used, KixMiller said.

The two products are used in the making of chemical fibers, pharmaceuticals, insecticides, dyestuffs, and explosives.

The new plant also increases the company's capacity to produce acetone and methanol.

Construction of new units to make derivatives of acetic anhydride and acetic acid will begin as soon as work on units now under way is completed, KixMiller said.

New Committee Chairmen for Refining Division Appointed

CHICAGO.—Eight new committee chairmen for the Division of Refining of the American Petroleum Institute were appointed November 12 by John W. Newton, vice president of the refining division.

The new chairmen and their committees are: W. L. Stewart, Jr., Union Oil Co. of California, Smoke and Fumes; John T. McCoy, Tide Water Associated Oil Co., Bayonne, N. J., Automotive Research; Albert E. Miller, Sinclair Refining Co., New York, Petroleum Products.

C. E. Headington, Atlantic Refining Co., Philadelphia, Analytical Research; R. N. Giles, Standard Oil Co. (Ind.), Chicago, Disposal of Refinery Wastes; W. H. Creel, Phillips Petroleum Co., Bartlesville, Okla., Refinery Equipment; Dean R. Turner, Standard Oil Co. (Ohio), Cleveland, Training; and C. M. Ridgway, Pure Oil Co., Crystal Lake, Ill., Program.

Pretax Refining Profits Drop in Second Quarter

WASHINGTON.—Pretax profits of petroleum refiners were 20 per cent less in the second quarter of this year than in the preceding quarter.

After provision for income and excess-profits taxes, however, the net downward change between quarters due principally to the oil strike, was only 2 per cent, it is disclosed in the quarterly review of industry earnings by the Federal Trade Commission and Securities and Exchange Commission.

The refining industry was one of nine reporting decreases in profits after taxes ranging as high as 43 per cent for the iron and steel industry. Fourteen other industries surveyed showed greater profits than in the first quarter running as high as 117 per cent for the leather industry.

The report placed refinery corporation profits, before taxes, at $602,000,000 in the second quarter against $751,000,000 in the first quarter. Profits after taxes were $485,000,000 against $497,000,000.

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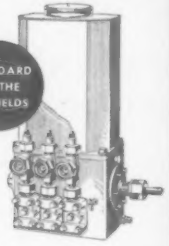

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I.R.A.A. to Continue Policy On Crude-Products Pricing

CHICAGO.—Lloyd Freese, Bell Oil & Gas Co., newly-elected vice president of the Independent Refiners Association of America, said here the I.R.A.A. will continue to stand steadfastly by its policy opposing any increases in ceiling prices for crude oil without similar adjustment in product-price ceilings.

Freese addressed the annual I.R.A.A. convention held concurrently with the annual American Petroleum Institute meeting in Chicago. Speaking in the absence of M. H. Robineau, president of Frontier Refining Co., who was elected to another term as president of the association, Freese said maintaining the crude-products price differential "is not just a matter of equity, it means the very existence of the independent refiner in this country."

Directors for the coming year are: Robineau; Rex Blazer, Ashland Oil Refining Co.; Max Fisher, Aurora Gasoline Co.; Lloyd Freeze; Clarence Rice, El Dorado Refining Co.; Elmer Erickson, Northwestern Refining Co., and Richard B. Kahle, Eastern States Petroleum Co.

James Dunnigan, Producers Refining Co., was elected secretary-treasurer.

Koppers Petrochem Plant to Go on Stream This Month

PORT ARTHUR. — Koppers Co.'s new petrochemical plant here will begin operations this month.

The plant receives feedstocks from Gulf Oil Corp.'s nearby refinery and produces ethyl benzene which is then transhipped to another Koppers plant at Kobuta, Pa., for further processing.

A.P.I. Compiling Glossary Of Petroleum-Refining Terms

NEW YORK.—A glossary of terms used in petroleum-refining technology will be published by the American Petroleum Institute this winter.

A final draft of the work, comprising about 1,800 terms, has been drawn up by the Committee on Petroleum Products of A.P.I.'s Division of Refining. Its publication was approved by the General Committee on Refining and the A.P.I. Board of Directors at the recent annual meeting of the institute.

The glossary is the work of a five-man subcommittee, headed by Eugene Ayres, of Gulf Research & Development Co., Pittsburgh. A. E. Miller, Sinclair Refining Co., New York, is chairman of the parent Committee on Petroleum Products, which has steered the work for the past several months.

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NATURAL GAS

New York Body Develops Stringent New Safety Code

ALBANY, N. Y.—The New York Public Service Commission has drawn up a comprehensive new code of safety regulations covering the operation of natural-gas distributing companies and standards of construction, operation, and maintenance by interstate pipe-line companies in the state.

Compliance with the order is estimated by the agency to cost distributing companies in the state about $6,000,000. No estimate of the cost to interstate transmission firms was made.

The directive orders every gas company transmitting gas under pressure of more than 125 psi. to conduct surveys within 60 days to determine whether their lines and other facilities are up to the standards set by the commission. They must report within 90 days to the commission on whether their facilities conform or fail to conform to these standards.

A commission spokesman said it was not known as yet how long it would take the companies to attain all of the safety specifications required by the order. However, it is thought that it would be a large order, since the P.S.C. safety rules are substantially more exacting than those required by the safety code of the American Standards Association.

The association permits lighter cross-country piping than that required within towns and cities. The New York body said this is not satisfactory in New York State, since there are populated areas that do not fall within the standard code classification of cities and villages.

FPC Seeking More Data in Gas Firms' Monthly Reports

WASHINGTON.—The Federal Power Commission has announced that it proposes to change Form No. 11, Monthly Statement of Operating Revenue and Income Covering Natural Gas Companies, to call for more information.

The new form would require the gas companies to report:

1. Detail of operating expenses by functional accounts groups, including a statement of the cost and volume of the purchased gas.
2. Interest charged to construction.
3. Gas-construction work in progress.
4. Gas materials and supplies.
5. Volume and value of gas stored underground.

Dividend appropriations required to be reported in the existing form would be omitted in the proposed revision.

The commission said it intends to make the new form effective for the filing of the monthly statement for January 1953. Anyone wishing to submit their views, data, or comments on the revision have until December 1.

Texas Gas Completing New Alford, Ind., Storage Pool

OWENSBORO, Ky. — Texas Gas Transmission Co. will place its new natural-gas storage reservoir at Alford, Ind., in full operation this winter.

The Alford operation will increase the company's deliverability from underground storage for peak-day requirements from the present 5,000,000 cu. ft. daily to 40,000,000 cu. ft. daily. The pool has a storage capacity of 4 billion cubic feet.

The company now operates a storage field at Oaktown, Ind., with a daily deliverability of 5,000,000 cu. ft. This plus the 35,000,000 cu. ft. per day soon to be available from the Alford pool and another 7,500,000 cu. ft. per day at a third pool now under development will soon bring the company's daily deliverability from storage up to 47,500,000 cu. ft.

OPS Rejects 13-Cent Price For Ochiltree County Gas

WASHINGTON. — The Office of Price Stabilization has turned thumbs down on a contract submitted to it for approval which called for sale of natural gas at 13 cents per M.c.f.

The application was filed by J. M. Huber Corp., Borger, Tex.

The company negotiated a contract with Public Service Corp. of Texas to sell gas from Ochiltree County, Texas, for the 13-cent price.

The agency stuck to its policy of generally holding field ceiling prices to 10 cents per M.c.f. at the well head.

NATURAL GASOLINE

Conoco's New Wyoming Plant To Produce 4,200 Gal. Daily

PONCA CITY, Okla. — Continental Oil Co.'s new natural-gasoline plant in Johnson County, Wyoming, will have a production rating of about 4,200 gal. of weathered compression gasoline per day, the company revealed last week.

Input gas rating of the plant is reported at 14,400,000 cu. ft. daily. It will produce no L.P.G.

The plant gets its gas from wells in the Sussex-Meadow Creek area.

Construction operations are expected to be completed about March 15 next year.

West Texas Gas Expanding Capacity of Fritch Plant

LUBBOCK, Tex.—West Texas Gas Co. has launched a construction program at its Fritch, Tex., natural-gasoline plant to boost production capacity from the present 21,400 gal. to 42,600 gal. daily.

New equipment, including oil pumps, depropanizer, direct-fired heaters, cooling facilities, and heat exchangers, is being installed primarily to expand production of L.P.G. Currently the plant is producing only 1,400 gal. daily of L.P.G. The expansion will bring this figure up to 18,000 gal. daily. Production of natural gasoline will be hiked from 20,000 to 24,600 gal. daily. Gas-processing capacity will be increased from 55,000,000 to 60,000,000 cu. ft. daily.

The construction program is scheduled for completion about July 1, 1953.

The plant processes natural gas produced from wells in West Panhandle field. Residue gas is sold by West Texas Gas to its consumers.

Cities Service Starts Work On New Plant at Blackwell

BLACKWELL, Okla.—Construction is under way on Cities Service Oil Co.'s new natural-gasoline plant here.

Company officials said last week the plant will be completed in the spring of 1953.

Production capacity for all products is expected to be slightly more than 200,000 gal. As currently planned, the plant will produce 57,000 gal. of natural gasoline, 125,000 gal. of L.P.G., and 20,000 gal. of isobutanes daily. Ultimate gas-producing capacity will be 190,000,000 cu. ft. per day.

Gas for this plant is taken from Hugoton field through the company's 26-in. transmission line, and the residue gas from the plant goes back into the line for shipment and sale in Kansas and Missouri.

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Paradoxical Petroleum Province

THE South Permian basin of West Texas and Southeast New Mexico is still considered to be one of this country's most promising "future" petroleum provinces despite the fact that:

1. More than 10 billion barrels of oil have already been proven within its limits. The basin's proved remaining reserve of 6.5 billion barrels is equal to that of the 20-year-older Gulf Coast areas of Texas and Louisiana. Current daily crude production of the area (1,350,000 bbl.) is more than the combined daily production of the Gulf Coast provinces.

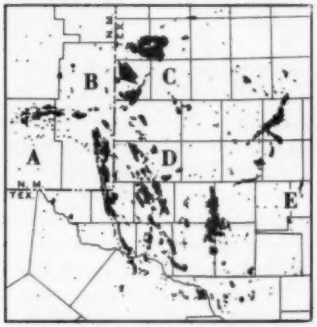
2. Predrilling exploration costs are high. Structures are masked by Permian sediments. In the lesser-explored areas, especially in the Delaware basin, subsurface control is essentially nonexistent and the results of geophysical surveys leave much to be desired.

3. Depths to oil accumulations in some areas of this hard-rock country are as great as those currently dug in the Tertiary sediments of the Gulf Coast, and future drilling in parts of the Delaware basin will be even deeper.

Proof that this great proven province is considered to have a future is exemplified by the tight lease situation which exists throughout the area. Open leases, even at fabulous prices, are hard to find.

For the first time in many years the South Permian basin has no one area that is the center of intense interest and activity. Exploratory and development work is spread across the entire province. In some areas well density has increased to the point that subsurface studies have become the primary exploration tool. This is the case in and around Terry County (C on sketch) where trends of productive reef pinnacles are being sought and found. Along the western edge of the Eastern platform, in Coke County (E on sketch) and on to the south, detailed subsurface studies with the aid of the seismograph are being made in search of sand pinchouts against the flanks of reef buildups.

Andrews County (D on sketch) is the scene of high seismic activity and



wildcat drilling to Ellenburger structures at 12,000 to 14,000 ft. Drilling blocks and exploratory work in this area come high—an operator may have well over $1,000,000 invested in a proposed location for a $500,000 wildcat.

Over in the New Mexico portion of the Delaware basin (A on sketch), Richardson & Bass have three far-apart, Devonian-bound wildcats which are being watched with intense interest because of the great potentialities recognized for this essentially productionless area.

If one wildcat in the South Permian basin had to be singled out as the most significant discovery of the year it would probably be Amerada Petroleum Corp. 1 Weems (arrowed on map). This wildcat, located in a northeastward extension area of the high-success-ratio area of northern Lea County (B on sketch), was recently completed for 1,934 bbl. of 43°-gravity oil on a ¾-in. choke from the Devonian at 11,773-11,860 ft.

Perhaps more significant than the Devonian discovery was the fact that a drill-stem test of the Mississippian limestone, normally siliceous with considerable chert, flowed for 2½ hours at rates of 75 bbl. per hour. This indicated Mississippian discovery is the first significant Mississippian oil found in the basin.

The wildcat cut only 158 ft. into the Devonian. It was not carried to the water table because circulation was lost in the deeper pay whenever the mud was made heavy enough to prevent a blowout from the Mississippian.

Lots more oil is going to be found in the South Permian basin but development rushes will be less spectacular than in recent years because this "future province" is also a mature province in many respects, particularly its lease situation which hampers freedom of movement.

Philip C. Ingalls.

HIGHLIGHTS OF WEEK'S DEVELOPMENTS

MONTANA . . . C. H. Murphy, Jr.'s discovery northwest of East Poplar field has been completed with a gage of 85.26 bbl. of oil in 8 hours on ¼-in. choke. Production is from three perforated zones in the Mississippian.

TEXAS PANHANDLE . . . Gulf Oil Corp. 1-A McCuistion promised a new Albany producing area 3 miles southeast of Quinduno field; Gulf 5 Haggard, 1 mile south of production in the same field flowed 29 bbl. of oil in 4 hours from 4,124-36 ft., and Gulf 1 Haggard, deep exploration for the field and west offset to the lower Albany discovery, was testing the granite wash at 6,736-40 ft. Last 24-hour test gaged 108 bbl. of oil through ⅞-in. choke, plus 14 bbl. of salt water.

OKLAHOMA . . . A successful test of perforations in the Bromide sand has been completed at Beach & Talbot and Sohio Petroleum Co.'s Coal County discovery in lower East Central Oklahoma. During drill-stem test the 1 Guth flowed 206 bbl. of oil in 8 hours and 10 minutes and is now shut in for tank room.

Eastern Texas

New Woodbine Production Opened in Wood County

DALLAS.—New Woodbine production for Wood County, 3½ miles east of Pine Mills, has been opened by L. A. Grelling Co. 1 Mary Saner. The wildcat had tried for production in the sub-Clarksville, was drilled to 6,071 ft., then completed in sand pay at 3,348-52 ft. Initial potential was 172 bbl. of 19°-gravity oil a day.

B. G. Byars 2 Paul Pewitt, Morris County wildcat, developed salt water on drill-stem test in the Paluxy at 4,515-45 ft., then recovered 1,000 ft. of oil with no water on a test at 4,703-15 ft. If successful, it will be the country's first commercial production.

EAST TEXAS (DISTRICTS 5 AND 6) WILDCAT FAILURES

Cass County: Humble Oil & Refinery Co. 1 Early Turner, Issac Campbell Sur., A-178, dry, TD 8,308 ft., Blossom 3,450-60 ft.

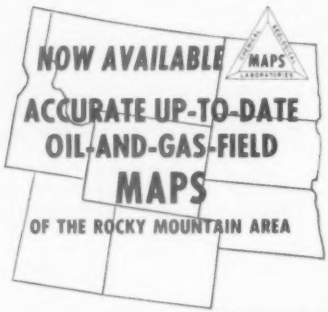
Henderson County: E. B. Fletcher 1 J. C. McNair, D. O. Williams Sur., A-838, dry, TD 4,114 ft., elev. 405 ft., Woodbine 3,139 ft.

Hopkins County: A. O. Phillips 1 Sam Coker, Levi Landers Sur., A-548, dry, TD 4,681 ft.

Hunt County: Floyd C. Ramsey 2 P. B. Paul, Mary Latham Sur., A-597, dry, TD 3,564 ft.

Kaufman County: Trans-Tex Drilling Co. 1 B. H. Barfield, P. Q. Irvine Sur., dry, TD 3,950 ft.

Red River County: Goss Drilling Co. 1 Pat Beadle, M. G. Nall Sur., dry, TD 2,605 ft.



Made by one of the oustanding oil-field-map draftsmen in the country. Not roughly drawn for general purposes but accurate, complete and detailed by basin, workable areas within each basin and development map of specific areas. Maps are available on cloth or paper. The scale used varies to make each map as practical and useful as possible.

WILLISTON BASIN MAPS

THESE MAPS SHOW DRAINAGE, ROADS, RAILROADS, WILDCATS AND DEVELOPMENT

Map of Williston Basin and adjacent area

Map of the Malta Area.
This map shows parts of Phillips County, Montana. Takes in Twps. 27N through 33N; Ranges 28E through 32E.

Map of the Lodge Creek Area.
This map shows parts of Blaine and Hill Counties, Montana. Takes in Twps. 34N through 37N; Ranges 14E through 20E.

Map of the Volborg Area.
This map takes in parts of Custer and Powder River Counties, Montana. Takes in Twps. 2S through 5N; Ranges 48E through 52E.

Map of the Miles City Area.
This map takes in parts of Custer and Prairie Counties, Montana. Takes in Twps. 6N through 12N; Ranges 46E through 51E.

Map of the Winnett Area.
This map takes in parts of Petroleum and Fergus Counties, Montana. Takes in Twps. 12N through 19N; Ranges 25E through 29E.

Map of the Mosby Area.
This map takes in parts of Garfield County, Montana. Takes in Twps. 13N through 19N; Ranges 30E through 35E.

Map of the Sumatra Area.
This map shows parts of Rosebud, Treasure and Yellowstone Counties, Montana. Takes in Twps. 6N through 12N; Ranges 32E through 36E.

Map of the Melstone Area.
This map shows parts of Petroleum, Musselshell and Yellowstone Counties, Montana. Takes in Twps. 6N through 12N; Ranges 27E through 31E.

Map of the Porcupine Area.
This map shows parts of Rosebud and Treasure Counties, Montana. Takes in Twps. 6N through 12N; Ranges 37E through 41E.

Other Area Maps

NORTH DAKOTA

Beaver Lodge
Croff-Keene
Manning Dickinson
Canon Ball River
Stanley-Belden
Williston
Flat Rock Butte
Manning
Amidon
Noonan
Beach-Medora
(parts of Montana)
Crosby
Alexander
Mott

MONTANA

Richey
Poplar
Glendive
Pine
Cedar Creek
Weldon
North Glendive
Wolf Creek
Glasgow
Chinook Zurich
Plentywood
Mildred
Winifred
Harlem-Dodson
Bull Creek-Quinn
Sidney
Culbertson
Loring
Boxelder Creek
Oneill-Chalk Buttes
Beach-Medora
(parts of No. Dakota)
Telegraph Creek

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County maps available for that part of Montana and North Dakota that lies within the Williston Basin. These maps are available in either paper or cloth with a scale of 1"=2 miles. Prices on application.

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Canadian Fields

Exploratory Effort Has Excellent Results

CALGARY.—The past 7-day period in western Canada's oil and gas exploratory program has resulted in the discovery of two oil finds as well as two natural gas shows at offset wells to previous oil discevries. Both the oil and gas strikes were recorded in Alberta during the week ending November 15.

The oil discoveries were made in the southern sector of the province, with one being at a well in the Sunnynook-Cessford area and the other near the town of Jenner about 40 miles southeast of the Sunnynook find and approximately 125 miles east-southeast of Calgary. One of the gas strikes was also in southern Alberta, about 135 miles northeast of Calgary, while the other was in the west central sector of the province, some 25 miles west of Wetaskiwin.

The Jenner Find, the most recent of the two oil discoveries was chalked up by Martin Mayrath, independent American oil operator, who, who is drilling Western-Mayrath 8-14 Jenner. The well, Western-Mayrath 8-14, Jenner, on LSD 4, 18-21-8w4 gave up heavy crude oil during drill-stem test in the Sunburst sand. The 8-14 Jenner contacted the pay sand at 3,097 ft. or 651 ft. below sea sea level (K. B. elevation 2,466 ft.), and ran 1-hour drill-stem test from 3,096-3,108 ft. Maximum natural gas flow rate was 6,000,000 cu. ft. daily, and recovery was 10 ft. clean oil, of gravity between 17° and 18°. Later test, of interval 3,123-133 ft., flowed gas at 84,000 ft. daily and yielded pipe recovery of 2,130 ft. of clean crude oil, no water. Crew has set string of 7 in. production casing at 3,328 ft., prior to drilling a head to test lower horizons.

The second find came at a well being drilled by Anglo Canadian Oil Co. on its own acreage about 6 miles north of gas and medium-gravity crude oil production at Cessford. This well, Anglo 3 Sunnynook, on LSD 4, 12-26-13w4, indicated medium-gravity crude oil discovery in the first member of the Blairmore section of the Lower Cretaceous. Drill-stem test in that member Cretaceous from 3,370-90 ft. gave a gas flow to surface in 15 minutes at rate 35,000 cu. ft. daily. When pipe was pulled it was found to contain 434 ft. of clean oil, 248 ft. of mud-cut oil, 124 ft. of oily mud and 124 ft. of oily water-cut mud. Test in the lower sections of the Cretaceous gave up water with slight oil showings. Gravity of the oil discovery was measured at 24.4°. Crew drilled ahead to 3,536 ft. in the Madison limestone formation with finding further oil or gas encouragement and has now run and cemented production casing to the top of the Madison. It has not been decided how soon the oil show will be tested.

The Western Homestead-New Ranchmen's-Petcal group that discovered light-gravity crude oil in the Viking sand formation at Hamilton Lake in southern Alberta earlier this month has recorded a sizable flow of natural gas at its first follow-up to that oil discovery well. This new venture, Ranchmen's 5-13 Hamilton Lake, on LSD 5, 13-35-9w4, had a flow of natural gas in excess of

2,000,000 cu. ft. daily during test in the Viking sand formation, but failed to show any oil and has now been plugged and capped as a potential gasser.

The second gas strike this week was made by a team headed by Canadian Gulf Oil Co. This gas find came to Gulf C. P. R. 8 Norman, on LSD 8, 4-46-28w4, northwest offset to the Gulf C. P. R. 4 Fiveland D3 Devonian oil discovery in the Pigeon Lake area of central Alberta. Test in the Lower Cretaceous horizon from 5,478-93 ft. flowed gas to surface 1 minute after packer was opened at maximum rate 5,210,000 cu. ft. daily, and yielded recovery of 50 ft. mud and 10 ft. of distillate. Crew is now reaming out core hole preliminary to heading for its main objective, the D3 zone of Devonian.

CANADIAN SUCCESSFUL WILDCATS

Ranchmen 1 Hamilton Lake on LSD 8, 14-35-9w4, TD 3,713 ft. IP 288 bbl. oil per day.

Anglo 1 Rochester, on LSD 2, 12-62-23w4, TD 4,210 ft. capped gasser.

UNSUCCESSFUL WILDCATS

Jarvis Skyline Jarvis 1 Mic Mac, on LSD 9, 26-50-24w4, TD 5,715 ft.

Shell 2 Flat Lake, on LSD 7, 14-66-19w4, TD 2,275 ft.

Lee-Carlson 3-18 Big Valley, on LSD 3, 18-32-20w4, TD 6,557 ft.

Louisiana-Ark.

Testing Begun At Second Summerfield Field Well

SHREVEPORT.—Testing has begun at the second well in Summerfield field, Claiborne Parish, northwestern Louisiana. Magnolia Petroleum Co. is perforating to test from 11,466-501 ft. to evaluate shows found at 1 Drew F. Hightower, C SW SW 18-22n-4w. Hole was taken to 11,515 ft. and cased to that depth. This well topped the possible pay section about 700 ft. lower than the discovery well. Skelly Oil Co. has cemented production casing at 10,647 ft. after taking the hole to 11,213 ft. at 1 Wasson "B," another important Summerfield test. This well has missed the upper pay producing at the discovery well.

Continental Oil Co. is drilling ahead at 6,450 ft. in the Pettit lime after coring lime with slight shows of oil in two intervals at their 1 Stewart in 19-23n-12w, Redland field confirmation try, Bossier Parish.

Lion Oil Co. has attempted another drill-stem test from 9,186-9,237 ft. at 1 Hedgepeth, Section 27-20n-4w, on the west flank of Hico-Knowles field, Lincoln Parish. The sand has been identified as the McFearin of the Cotton Valley. Recovery on a core from 9,187-9,237 ft. was 50 ft., 4 ft. hard sand with fair porosity, good gas-distillate taste and odor, 17 ft. of hard tight sand, non-porous, having gas-distillate taste on fresh break, 21 ft. shale, 4 ft. hard, dense lime and 4 ft. of firm shale. A test from 9,192-9,237 ft. recovered water cushion cut with gas and one joint of gas-cut mud. The well blew for 2 minutes and then died.

Arkansas.—Sneed Bros. are rigging up pump to complete in the Rodessa at 1 Armstrong, C NW NW 10-15s-22w, Falcon area wildcat in Nevada County, after swabbing 32°-gravity oil. Oil was swabbed from perforations at an unestimated rate from 2,692-97 ft. with hole bottomed at 3,363 ft.

LOUISIANA WILDCAT FAILURES

Catahoula Parish: Justiss-Mears Oil Co. 2 Tensas Delta Lumber Co. "C," C NW SE 33-9n-7e, dry, TD 5,701 ft.

Hunt Oil Co. and Gulf Refining Co. 80

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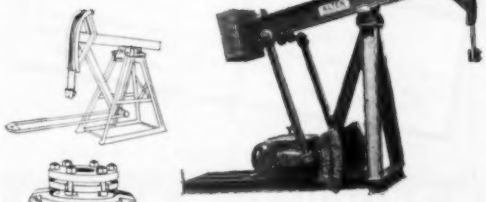

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- Flame hardened gear teeth for hardest surfaces.

ALTEN

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LANCASTER, OHIO

Louisiana Delta, C NW SE 25-6n-5e, dry, TD 6,000 ft.

Concordia Parish: Barnett Serio et al 4 Angelina Lumber Co., C NE NW 36-4n-6e, dry, TD 7,552 ft.

Franklin Parish: Chicago Mill & Lumber Co. 1 Mutual "C," C SW SW 22-12n-9e, dry, TD 8,602 ft.

La Salle Parish: Hunt Oil Co. et al 1 School Board "A," C NW SW 16-7n-4e, dry, TD 5,003 ft.

Sabine Parish: Carter Oil Co. 1 Louisiana Long Leaf Lumber Co. "D," C SE SW 8-6n-12w, dry, TD 4,269 ft.

ARKANSAS SUCCESSFUL WILDCAT

Ouachita County: Alcan Oil Co. 1 Slaughter, 800 ft. N and 330 ft. E SWc SE SW 14-14s-19w, pumped 92 bbl. of oil from Buckrange 1,962-76 ft., TD 2,000 ft. (discovery tentatively called Buena Vista).

ARKANSAS WILDCAT FAILURE

Clay County: Thomas E. Knight Oil & Gas Co. 1 Asher, C NW NW 15-21n-4e, dry, TD 417 ft.

North-Central Texas

Good Producer Added To New Montague Area

WICHITA FALLS. — George S. Engle added a good producer to the new area north of Montague and spotted location for a wildcat 2½ miles northwest of Montague.

Engle 2 Fenoglio was completed for 356 bbl. of oil a day through 20/64-in. choke from pay section between 5,950-65 ft. Engle 1 W. T. Minor is the new operation, projected to 6,500 ft. and located in the Milne Survey, A-485, 2 miles southwest of the Engle Strawn area.

In ack County, Ada Oil Co. had discovery production at 1-A T. H. Cherry-homes, 8 miles east of Jacksboro. On initial testing the well was reported to have flowed 228 bbl. of oil in 24 hours through ½-in. choke, from perforations at 5,152-60 ft.

NORTH CENTRAL TEXAS (DISTRICTS 9 AND 7-B) SUCCESSFUL WILDCATS

Coleman County: Gilchrist Drilling Co. 1-A Stinson, Sec. 10, T&NO Sur., new pay offset to Jennings sand discovery, TD 2,531 ft., Home Creek pay 2,443 ft., IP pumped 9.3 bbl. 41°-gravity oil.

Cooke County: Henderson Drilling Co. 1 Breeding, W. J. Hawkins Sur., A-497, extension well, TD 1,948 ft., pay 1,938 ft., IP pumped 33 bbl. 28°-gravity oil.

Jones County: Bay Petroleum Co. 1 A. W. Clemmer, 15-17-T&P, TD 5,020 ft., elev. 1,758 ft., pay 4,484 ft., IP 71 bbl. 42°-gravity oil, 12/64-in. choke, TP 200 psi., GOR 1,180 cu. ft.

Montague County: J. B. Revier et al 1 Hinds Clark, Blk. 43, ETRR Sur., A-247, north extension well, TD 6,029 ft., conglomerate pay 5,854 ft., IP 98 bbl. 42°-gravity oil, 30/64-in. choke, TP 260 psi., GOR 1,200 cu. ft.

Throckmorton County: Pan American Production Co. 1 W. L. Richards, Sec. 135, Comanche Indian Reservation Sur., A-1,407, TD 4,680 ft., elev. 1,320 ft., Mississippian 4,562 ft., pay 4,568 ft., IP 213 bbl. 43°-gravity oil, 16/64-in. choke, TP 750 psi., GOR 1,145 cu. ft.

Wise County: Tom B. Medders 1 J. F. Whittaker, J. B. George Sur., A-929, TD 5,922 ft., elev. 1,042 ft., conglomerate pay 5,770 ft., IP pumped 41 bbl. 41°-gravity oil.

Young County: Eugene Moore 1 Baldwin-Lovett, Sec. 207, TE&L Sur., TD 737 ft., pay 726 ft., IP pumped 13.3 bbl. oil.

NORTH CENTRAL TEXAS (DISTRICTS 9 AND 7-B) WILDCAT FAILURES

Archer County: L. T. Burns 1 W. V. Weinzaphel, Lot 107, Clark & Plumb, dry, TD 4,568 ft.

Fortex Oil Co. 1-A Perkins, Blk. 10, ATNCL, dry, TD 1,675 ft.

George W. Graham 1 Perkins-Ikard, Sec. 1,888, TE&L, A-568, dry, TD 983 ft.

Texas Canadian Oil Corp. 1 E. Munchrath, Blk. 45, Clark & Plumb, dry, TD 4,659 ft.

Baylor County: L&M Oil Co. 1 Mrs. W. B. Wise, 6-B-H&TB, dry, TD 4,750 ft.

Coleman County: Henry Kloppenburg 1 R. L. Allen, Blk. 1, Coleman CSL, dry, 2,932 ft., elev. 1,681 ft., Winchell sand 1,854 ft.

Cooke County: John Strickler 1 W. Fleitman, C. C. Goodman Sur., A-426, dry, TD 2,370 ft.

Fisher County: Jones & Stasney 1 W. J. Bryan, 184-1-BBB&C, dry, TD 5,403 ft., elev. 1,770 ft. Swastika 3,662 ft., Strawn 5,350 ft.

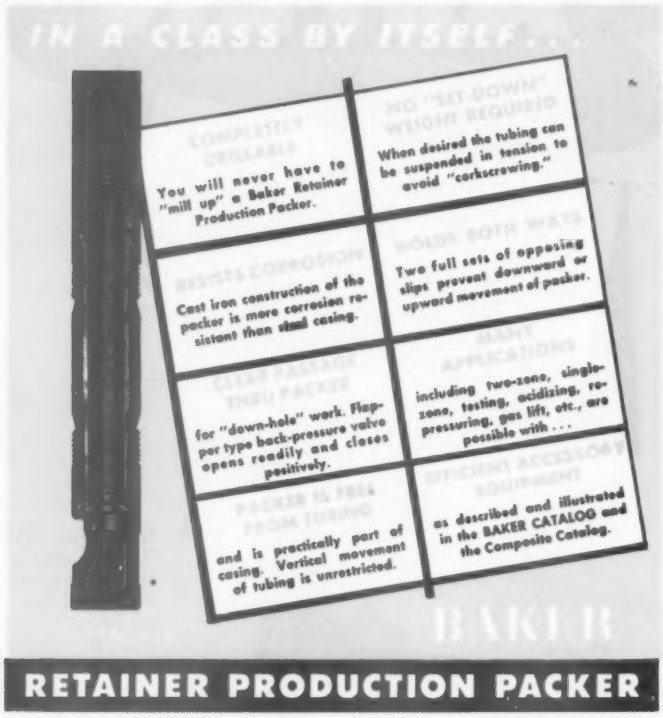
Jones & Stasney 1 Robertson, Sec. 185, BBB&C, dry, TD 4,065 ft.

Grayson County: Paul L. Miller 1 H. C. LeMaster, Alex Morten Sur., dry, TD 2,707 ft.

S. A. Winfrey 1 L. B. Lewis, L. B. Baker Sur., A-73, dry, TD 4,294 ft.

Hardeman County: Pearson-Sibert 1 Gilliam, Sec. 96, Northwestern RR Sur., Blk. H, dry, TD 8,040 ft., elev. 1,492 ft., Marble Falls 7,893 ft., Mississippian 8,020 ft.

Jack County: Russell Cobb Jr. 1-S Jackson,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Fain & McGaha 2 J. J. Power, W. L. Hunter Sur., A-966, dry, TD 3,478 ft.
Walter L. Plemons 1-S Bloodworth, Sec. 3,317, TE&L Sur., dry, TD 450 ft.
The Texas Co. 1 Ray Cherryhomes, T. G. Box Sur., A-35, dry, TD 6,863 ft.

Jones County: Green & Belcher 1 J. A. Bradshaw, 1-2-T&NO, dry, TD 2,280 ft., elev. 1,702 ft., Gunsight 2,213 ft.
Jones & Stasney 1 W. E. Clounts, 1-14-T&P, dry, TD 5,006 ft., elev. 1,686 ft., Caddo 5,966 ft.
Prince Bros. & Gehle 1 W. B. Adamson, Sec. 7, GH&H Sur., dry, TD 4,026 ft.
United States and Andree Drilling Co. 1 W. H. Grimes, Sec. 201, BBB&C Sur., dry, TD 3,405 ft., elev. 1,580 ft., Tannehill 1,765 ft., Palo Pinto 3,374 ft.

Knox County: Gene Goff 1 Walter S. Davis, D. G. Burnett Sur. 17, dry, TD 6,002 ft., elev. 1,401 ft., Caddo 5,742 ft., Mississippian 5,840 ft.
Yeatman Drilling Co. 3 W. S. Davis, Blk. 3, D. G. Burnett Sur., dry, TD 5,975 ft., elev. 1,448 ft., Caddo 5,625 ft.

Palo Pinto County: H. E. Harper 1 W. W. Belding, Sec. 4, W. M. Belding Sur., dry, TD 2,011 ft.

Shackelford County: Harry Beaumont 1 W. L. English, Sec. 18, University Lands, dry, TD 2,186 ft.
L. A. Hedrick 1 W. C. McCown, Sec. 18, S. A. Swenson Sur., dry, TD 1,932 ft., elev. 1,595 ft., Saddle Creek 1,580 ft.
Paul R. Wright 1 W. H. Green, 52-11-T&P, dry, TD 1,205 ft.

Stephens County: Kent & Preston 1 Virginia Gardenshire, 23-6-T&P, dry, TD 1,651 ft.
Necessity Oil Co. 1 E. M. Satterwhite, 16-6-T&P, dry, TD 2,227 ft.

Stonewall County: F. Kirk Johnson 1-A Smith, 143-1-H&TC, dry, TD 5,619 ft.

Taylor County: Phillips Petroleum Co. 1-A Caldwell, Sec. 507, H. B. Akles Sur., dry, TD 5,250 ft., Canyon reef 3,271 ft., Caddo 4,676 ft., Ellenburger 4,919 ft.

Throckmorton County: Jones & Stasney 4 Watt R. Matthews, Sec. 74, CIR Sur., dry, TD 4,809 ft.
G. E. Kadane & Sons 1 J. D. Carpenter, Sec. 972, TE&L, dry, TD 4,079 ft.

Wichita County: F. W. Langner 1 Joe M. Slama, James McGrain Sur., A-188, dry, TD 2,237 ft.

Wilbarger County: Frank Wood 1 W. T. Waggoner "Nan," 35-3-H&TC, dry, TD 1,998 ft.

Appalachian-Ohio

New Wildcat Slated For Saint George District

PITTSBURGH.—In Newark district, Wirt County, West Virginia, Hope Natural Gas Co., has taken over a well drilled by H. W. Schnider on the T. M. Anderson farm which was drilled to a depth of 2,665 ft. It is being rigged up to drill to the Oriskany sand. The well is on the Elizabeth Quadrangle, elevation 638 ft., 2.91 miles south of latitude 39 degrees 10 minutes and .83 mile west of longitude 81 degrees 25 minutes. Saint George district, Tucker County, Natural Resources Corp., located 1-2 Tucker County Court, elevation 1,586 ft., Parsons Quadrangle, 1.25 miles south of latitude 39 degrees 10 minutes and 4.30 miles west of longitude 79 degrees 35 minutes. Moorefield district, Hardy County, Baker & Hershberger have skidded the rig at 1 Thomas Williams. This was done on account of a bad hole at a depth of 915 ft. in the first drilling.

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WHERE THERE'S INDUSTRY THERE'S BESTOLIFE

Pennsylvania. — Mahoning Township, Armstrong County, Southwest Pennsylvania, Joy Gas Co. 1 Lon Allen, resulted in a good gas well gaging 1,000,000 cu. ft. and was completed at a depth of 1,450 ft. Unity Township, Westmoreland County, Peoples Natural Gas Co. 4003 A. J. Dotterway, is drilling at 9,200 ft., and 4008 J. R. Frola, at 6,530 ft.

Maryland.—Garrett County, Maryland, Eberly & Snee 1 Ross Lichty, topped the chert at 3,935 ft. and is drilling at 3,945 ft. Eagle Oil & Gas Co. 1 John Loher is shut down at 3,538 ft. The gas pay was shot and now tests 120,000 cu. ft.

OHIO

Mutual Oil and Gas 1 E. E. Harris, Section 24, Jackson Township, Knox County, extends Mt. Zion pool a location further to the south. Clinton sand was logged at 3,010-61 ft. with 500 ft. oil that made 90 bbl. in 24 hours after shot. In the southeast part of the township, the Allen Willey 1-6 Wm. Dennis, Section 22, a west offset to the 1 Mizer, had a good oil showing in the Clinton, found at 3,040-95 ft., that increased to 60 bbl. the first day after shot.

Natural Gas and Oil 1 Earl Hughes, Lot 23, New Castle Township, Coshocton County, a southwest offset to the discovery on Reese, had a fair showing of oil natural. Clinton sand was found at 3,309-69 ft. and made 30 bbl. in 24 hours after shot.

South Louisiana

Final Gage Run Calcasieu Extension

NEW ORLEANS.—The California Co. of New Orleans has run final gage on its 1 W. D. Jones et al, to extend production in Gillis-English Bayou field, Calcasieu Parish. On 10/64-in. choke well flowed 138 bbl. of 47.2°-gravity oil per day, tubing pressure 6,250 psi. Gas-oil ratio measured 25,630-1. Hole was originally drilled to 11,150 ft. but was plugged back to 10,823 ft. for the final test, after running 7-in. casing to 10,843 ft. Production is through perforations from 10,740-80 ft. Well is located 5 miles northeast of Lake Charles in Section 18-9s-7w. Northeast of the completed well, operator has started operations on 1 John P. Breaux et al, Section 8-9s-7w, and is preparing to drill ahead after setting 16-in. conductor pipe at 206 ft.

Eight miles southwesterly of Crowley, Acadia Parish, Sunray Oil Corp. has cemented casing at its 1 Pierre Cormier Jr., wildcat in Section 15-11s-1e, at total depth of 10,346 ft. Operator is now preparing to drill cement. Prior to running casing, cores were taken from 9,726-10,264 ft., but results have not been reported.

The California Co. is continuing to test its 2 W. A. Jones et al, West Delta Farm confirmation, Lafourche Parish, through perforations from 9,460-64 and 9,468-72 ft. Latest test with 2½-in. tubing set on packer at 9,428 ft., well flowed wash water for 1½ hours on ⅛-in. choke, under 650 psi. tubing pressure. Well, bottomed at 11,471 ft., has 7-in. casing set at 11,466 ft. Well is located in Section 3-17s-22e.

SOUTH LOUISIANA SUCCESSFUL WILDCATS

Avoyelles Parish: Kemp Drilling Co. 1 Fisher, 34-3n-5e, IL 8,505 ft., IPF 124 bbl. of oil per day, 42°-gravity, 9/64-in. in. choke.

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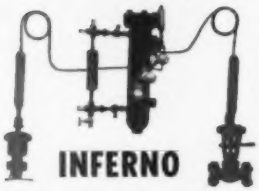

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St. Charles Parish: The California Co. 1 R. L. Smart, 12-12s-7e, TD 11,600 ft., 2,205,000 cu. ft. of gas per day, 10/64-in. choke.

SOUTH LOUISIANA WILDCAT FAILURES

Cameron Parish: Sun Oil Co. 1 Bishop, 5-15s-8w, dry, TD 12,005 ft.

East Felinciana Parish, The Texas Co. 1 M. Q. Appleby, 57-4s-1w, TD 10,505 ft.

Rapides Parish: Kemp Drilling Co. and D. D. Feldman Oil & Gas Co. 1 Brewer-Nienstedt, 62-4n-2w, dry, TD 6,532 ft.

Kansas

Damme Pool Production Gets 1½-Mile Extension

W L. HARTMAN has extended production of the Damme pool in northwestern Finney County, in the far western part of the state, 1½ miles to the south at his 10 Damme, SW SW SE 28-22-33. Producing from open hole at 4,767-76 ft. in the Mississippian, topped at 4,690 ft., the well pumped 10 bbl. of oil per hour natural. The area is at the northern extremity of the Hugoton gas field.

Six miles west of the Hugoton gas field and north of the Greenwood gas area in Morton County, in the extreme southwest corner of the state, Cities Service Gas Co. is completing its 1-A Boehm, NE NE NW 11-33-42, with an open flow of 6,530,000 cu. ft. of gas daily from Topeka lime. Pay is open through casing perforations at 2,988-3,008 ft. Hole had been drilled to 5,152 ft. Casing is bottomed at 3,313 ft. Drilling is under way at another wildcat 1-A Herman, northwest of the Greenwood area in the SE SE SW 1-33s-43w.

Lewis Drilling Co. 1 Buckbee, a wildcat in the SW SW SE 15-20-12, a mile west of production of the Chase-Silica field, near the south edge of Barton County, swabbed 40 bbl. of 40°-gravity oil in an hour during a test of Arbuckle lime, open at 3,373-85 ft., and is being put on the pump for completion. The area is 9 miles southeast of Great Bend.

Another Barton County wildcat, Don Ingling and L. B. Smith 1 Cochrane, SE NW SE 5-17s-13w, a mile south of the Trapp field, swabbed 2 bbl. of oil per hour from the same pay, open at 3,371-77 ft., and also is being put on the pump.

Following tests of the Arbuckle and Conglomerate zones which yielded only small amounts of oil, National Cooperative Refinery Association has plugged back to the Lansing in its 1 Cave, SE SE NW 8-11s-18w, northern Ellis County wildcat, and is continuing tests. From latest perforations at 3,406-12 ft. and 3,419-21 ft., the well swabbed 5½ bbl. of oil per hour. Location is 2 miles north of the Riverview pool, and about the same distance west of the Burnett Northwest pool.

KANSAS SUCCESSFUL WILDCATS

Barton County: Sohio 1 Cook, SW SW NE 8-19s-13w, pumped 190 bbl. of oil from Arbuckle 3,347-54 ft., TD 3,469 ft.

Trego County: Jones, Shelburne & Farmer 1 Groff, SW SW SW 26-14s-21w,

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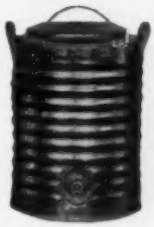

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KANSAS WILDCAT FAILURES

Brown County: J. E. Polensky et al 1 Babcock, NW NW NW 10-1s-17e, dry, TD 2,600 ft.

Ellis County: Shelley-Miller 1 Dreiling, NE NE NE 27-12s-19w, dry, TD 3,873 ft.

Ellsworth County: Musgrove 1 Roelfs, NE NE SE 21-16s-9w, dry, TD 3,644 ft.

Geary County: F. G. Holl 1 Smiley, NE NE SW 23-12s-7e, dry, TD 2,362 ft.

Lane County: Trans-Era et al 1 Finley, NW NW NW 19-18s-27w, dry, TD 4,864 ft.

Osborne County: L. B. Stableford 1 Meyer, NE NE SE 36-9s-15w, dry, TD 3,867 ft.

Rice County: J. Bergman 1 Shonyo, NE SW NE 10-18s-10w, dry, TD 3,306 ft.

L. B. Jackson 1 Alton, SW SW NE 16-19s-6w, dry, TD 3,576 ft.

Rooks County: A. F. Keating 1 Sayles, NE NE SW 21-7s-16w, dry, TD 3,360 ft.

Trego County: Lewis Drilling Co. 1 Marquis, NE NW NW 18-12s-22w, dry, TD 4,159 ft.

Rocky Mountain

Operations to Resume At Duck Creek Wildcat

DENVER.—Shell Oil Co. has announced that operation will be resumed at the recently suspended wildcat in the Duck Creek area of McCone County, Montana, some 10 miles southwest of Shell's Richey area discovery, in Dawson County.

The resumption of testing at the well, 22-25-B-NP, E½ SE NW 25-22n-48e, follows successful test of a wildcat 2 miles further southwest of Richey field, in what has been referred to as the southwest Richey area. Shell's 21-22-B-NP, C NE NW 33-22n-48e, has tested fluid at the rate of 1,680 bbl. daily, with a net oil flow of 1,677 bbl. per day. The gage is calculated on the basis of 7-hour test of the interval 9,185-9,260 ft. following acidization of the open hole interval with 3,000 gal. Oil produced is 49.4° gravity, and is believed to be from Devonian formations. The well is a new pool, perhaps a new pay discovery, depending upon final identification of the producing zone by Shell.

Further tests in the Duck Creek wildcat are believed to be planned for Devonian. The well went to 10,188 ft. with Winnipeg sampled at 10,147 ft. Shows running up to 5 per cent oil recovered with mud and water on drill-stem tests were logged below 8,645 ft. Top of Kinderhook was tentatively called at 8,625 ft.

Shell has also tested shows in the confirmation effort, 21-24 C NE NW 24-4n-61e, in the Little Beaver area, Fallon County. The well made 900 ft. of gassy oil and muddy water with a total content of 50 per cent oil on drill-stem test of the interval 6,850-66 ft. Production in the discovery well in the area, southernmost along the Baker-Glendive anticline in Montana, was from Ordovician from the interval 8,474-8,525 ft. at the rate of 280 bbl. of 12 per cent water cut fluid per day.

To the north of this area Shell has completed the third producer in the Pine Unit, Wibaux County. The company's 41-30 Unit, C S½ NE NE 30-12n-57e, flowed 270 bbl. of oil daily through 12/64-in. choke.

In the East Poplar area, Roosevelt County, Montana, C. H. Murphy, Jr., released a gage of 345 bbl. per day at the 10 Unit, C SW NW 30-29n-51e, 3½ miles northwest of

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previous production in the field. The new-pool discovery produced from perforations 5,775-80, 5,609-17, and 5,626-37 ft. Murphy has spudded for 19 Unit, C SW SE 19-29n-51e, and staked location for 18 Unit, C SE NW 2-28n-51e.

Two gas discoveries in the Denver-Julesburg basin of Colorado and Nebraska have been completed, and two indicated oil discoveries are reported near completion. Ohio Oil Co. gaged 10,800,000 cu. ft. of gas daily from J sand at the 1 Spicknal, NW NW NE 10-13n-50w in the West Sidney area of Cheyenne County, Nebraska. Southern Production Co.'s 1 Mott, SW SW SW 23-3n-53w, in central Washington County, Colorado, made gas at the rate of 6 million cu. ft. per day, also from the J sand on final tests. This discovery is shut in for pipe-line outlet.

Twin Oil Co. is drilling below 7,100 ft. at the 1 Cuykendall, NE NE SW 12-2n-63w, wildcat in southeastern Weld County, Colorado, after recovery of 380 ft. of 48°-gravity oil from the J sand from the interval 6,997-7,015 ft. The wildcat is west of previous production in the current play in this basin. South Texas Development Co. has run casing in the 1 Derks, NW NW SE 17-8n-56w, northeastern Weld County, after the well flowed at the estimated rate of 7 bbl. per hour on drill-stem test of the interval 5,917-30 ft. in J sand.

WYOMING WILDCAT FAILURE

Niobrara County: Atlantic Refining Co. 1-B Sam Jones, NE NW NW 20-34n-66w, dry, TD 9,699 ft.

COLORADO SUCCESSFUL WILDCAT

Washington County: Southern Production Co. 1 Mott, SW SW SW 23-3n-53w, flowed 6,000 M.c.f. of gas per day through open 2-in. tubing, "J" sand gas discovery, new field, "J" sand 4,844 ft., TD 5,169 ft.

COLORADO WILDCAT FAILURES

Archuleta County: Penrose & Tatum 1 Whitney Newton, C SW SW 26-34n-1w, dry, TD 1,606 ft.

Lincoln County: Kewanee Oil Co. 1 Josserand, NW SE NE 15-6s-53w, dry, TD 4,680 ft.

Logan County: Fred M. Manning, Jr., 1 State, SW NW NE 26-8n-54w, dry, TD 5,140 ft.

Bay Petroleum 1 Litel, SW SW SW 11-9n-52w, dry, TD 4,765 ft.

Moffat County: Carter Oil Co. 1 Government, SW SE SE 18-7n-91w, dry, TD 6,700 ft.

Morgan County: LaGloria Corp. 1-"B" Harry Bollinger, NW SW NE 3-3n-55w, dry, TD 5,257 ft.

San Miguel County: Penrose & Tatum 1 Marie Scott, NW NW SW 13-45n-12w, dry, TD 2,561 ft.

Washington County: Hanco Oil Co. 1 K. M. Falch, NE NE SE 34-5s-55w, dry, TD 5,408 ft.

WESTERN NEBRASKA SUCCESSFUL WILDCAT

Cheyenne County: Ohio Oil Co. 1 Spicknal, NW NW NE 10-13n-50w, flowed 10,800 M.c.f. of gas per day from "J" sand 4,765 ft., TD 4,840 ft. PBTD 4,810 ft.

WESTERN NEBRASKA WILDCAT FAILURES

Box Butte County: Harry Royster 1 Pierce, C NW NW 22-26n-49w, dry, TD 3,100 ft.

Cheyenne County: Chicago Corp. and Republic Natural Gas Co. 1 Alma J. Sell, NE NE SW 18-15n-48w, dry, TD 4,654 ft.

UTAH WILDCAT FAILURE

Duchesne County: Ohio Oil Co. 1 Ute Tribal,

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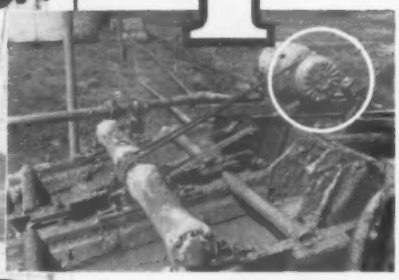
SEE PAGE 178

Eliminates 1 shocks from shakes



2 cuts down Drive Breaks

Two of Twin Disc's "Shock Absorber" Hydraulic Coupling Drives are speeding the jobs of Vierson and Cochran Drilling Company in the Oklahoma oil areas:

1. Twin Disc HYDRO-SHEAVE® Drives on 16 dual Link Belt Shale Shakers screening mud for re-circulation into the drill holes, are reducing electric motor overhaul to less than *10* percent of its former cost. They averaged one motor overhaul *per well drilled* before installing the HYDRO-SHEAVES; one-for-ten after! Starting current overloads were eliminated; operating efficiency is up; belt wear decreased substantially.

2. Two Twin Disc HUD Disconnecting Hydraulic Couplings (the coupling that also acts as an engine cut-off clutch) have eliminated shocks and jars, increased efficiency of drilling operations since their installation on a National Type 75CA Rig, powered by two big heavy-duty Waukesha LRO engines.

These are typical examples of how Twin Disc works with the makers and users of oil field machinery to provide the right friction or hydraulic power link for every oil field application. And Twin Disc has 8 Factory Branches and 60 Parts Stations to provide quick replacement parts and complete replacement units.

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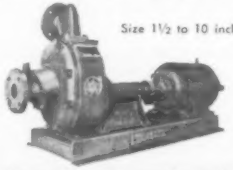

Size 1½ to 10 inch

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C NE SW 26-4s-3w(USM), dry, TD 7,509 ft.

MONTANA WILDCAT FAILURE

Musselshell County: Farmers Union Central Exchange 1 Thomson, SW SW SW 7-11n-3e, dry, TD 5,035 ft.

NORTH DAKOTA WILDCAT FAILURE

Towner County: Charles Rhodes 1 Gibbons, C SW SE 17-157n-65w, dry, TD 3,765 ft.

Permian Basin

Pennsylvanian Production Extended West in Pegasus

MIDLAND.—Pennsylvanian production in Pegasus field of Upton County was extended west at Sharples Oil Corp. 2-C TXL, Section 47-41-T4S-T&P. Completion potential was 538 bbl. of oil a day through 24/64-in. choke, from pay between 10,265-345 ft., total depth. Pay top at 10,265 ft. was on elevation of 2,881 ft. Location of the new producer is southwest of an Ellenburger well.

Gulf Oil Corp. 1 Northrup, Reeves County deep test, has been delayed by a fishing job for tubing. Total depth remained unchanged at 12,250 ft. at last report. Gulf 1 McElroy Ranch, northeast of Crane, cored fractured dolomite with oil stain and odor at 11,767-83 ft., and same with no shows to 11,800 ft., and was coring ahead. According to reports, it is in the Ellenburger, with tentative top placed at 11,602 ft. Gulf 2-H McElroy, Ellenburger failure, prepared to test in the Pennsylvanian around 9,130 ft.

In Coke County, Humble Oil & Refining Co. 2 Rawlings, north of 1 Rawlings, lower Gardner sand discovery, had indicated possible production from 5 pay sections, but was to complete from the lower Gardner sand. Drill-stem tests had indicated 36 ft. of pay in that section at 5,322 ft. A drill-stem test at 5,308-22 ft. had flowing oil in 44 minutes which was rated at 21 bbl. an hour, with no water. Drill-stem test to 5,322-35 ft. was under way. Other pay sections indicated included the Canyon sand, Palo Pinto, GoGens and upper Gardner.

Forest Oil Corp. 1-TXL-L, between North Cowden and Goldsmith fields of Ector County, developed 5,280 ft. of clean oil on a 90-minute test at 8,610-8,703 ft. Top of the Pennsylvanian was placed at 8,390 ft. on elevation of 3,140 ft. It was to be cored ahead.

Sinclair Oil & Gas Co. had a flush producer and 1-mile south extension well to Hulldale field of Schleicher County at 1 McClatchy, Section 31. Top on the Strawn lime at 5,580 ft., elevation 2,257 ft., was reported some 67 ft. low to the nearest producer, but drill-stem test at 5,625-50 ft. had oil in 24 minutes, cleaned into pits for 36 minutes, then gaged 67 bbl. of oil in 1 hour. Operators drilled to 5,675 ft. and were surveying for completion.

Group Oil Co. 1 Ohio-University, southern Andrews County wildcat, formerly Dub Yarbrough et al, had good flowing production from the Devonian on a drill-stem test at 8,056-8,205 ft. On the 1-hour test, gas showed in 9 minutes and oil in 50 minutes. The 10-minute flow was estimated at the rate of 40 bbl. an hour. Location in 28-11-University Lands, is about 2 miles southwest of the Block 11-Devonian field.

Southwest of Big Lake in Reagan County, Cabot Carbon Co. et al 1-A University, recovered oil and gas-cut mud in top of the Ellenburger from 9,498-9,550 ft., but developed sulfur water at 9,550-9,600 ft. Top of the Ellenburger was 9,498 ft., or minus 6,851 ft.

Southwest of Cabot's test, C. E. Hyde 1 University had top of the Devonian at 9,360 ft. and was drilling ahead below 9,420 ft. Elevation is 2,756 ft.

Texas Gulf Production Co. 1 Headlee, northeast of Odessa, recovered 1,080 ft. of heavily oil and gas-cut mud on a 3-hour test in the Devonian at 11,715-87 ft., and was drilling ahead.

Gulf Oil Corp. 1-A McCuistion, Roberts County wildcat 3 miles southeast of Quinduno field, had flowing oil on drill-stem test in the lower Albany at 4,090-4,128 ft. Oil reached the surface in 20 minutes, was cleaned into pits for 1 hour, then turned into tanks for 5 hours, where it made 25.3 bbl. of 51°-gravity oil through ¼-in. choke. On ½-in. choke, it gaged 44.2 bbl. of oil in 5 hours.

WEST TEXAS (DISTRICTS 8 AND 7-C) SUCCESSFUL WILDCAT

Pecos County: The Texas Co. 1 Lillian Rudiell, H&GN Sur., TD 3,122 ft., elev. 2,997 ft., gas pay 3,007 ft., IP 1,100,000 cu. ft., 2.7 bbl. oil.

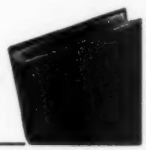
WEST TEXAS (DISTRICTS 8 AND 7-C) WILDCAT FAILURES

Borden County: C. E. Hyde 1 W. D. Johnson Jr., 47-32-T5N-T&P, dry, TD 8,311 ft., elev. 2,503 ft., Spraberry 5,880 ft., reef 8,246 ft.

Glasscock County: DeKalb Agricultural Association 1 TXL "I," 33-32-T5S-T&P, dry, TD 6,452 ft., elev. 2,679 ft., Spraberry 5,270 ft.

Irion County: Western Oil Co. 1 Sugg, 27-14-

Geophysical prospecting methods and their application in petroleum and mineral exploration



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H&TC, dry, TD 8,700 ft., elev. 2,508 ft., Ellenburger 8,525 ft.

Runnels County: La Gloria Corp. 1 J. D. Johnson, J. M. Caldwell Sur. 367, dry, TD 2,580 ft., elev. 1,645 ft., McMillan sand 2,505 ft.

Scurry County: H. D. Phillips Jr. J. G. Rollins, 147-97-H&TC, dry, TD 3,182 ft., elev. 2,287 ft., Clear Fork 3,051 ft.

Winkler County: Shell Oil Co. 52 Sealy Smith Foundation, 55-A-G&MMB&A, dry, TD 5,250 ft.

TEXAS PANHANDLE (DISTRICT 10) WILDCAT FAILURES

Donley County: Nabob Production Co. 1 J. E. Jones, 24-C2-G. C. Shoop Sur., dry, TD 3,596 ft.

Hartley County: Hunt Oil Co. 1 Finch, 94-2-B&B Sur., dry, TD 7,508 ft.

SOUTHEAST NEW MEXICO

Gulf Oil Corp. 1 Federal-General American, deep test in Grayburg-Jackson field, had total depth at 11,277 ft. and prepared to core ahead. Drill-stem test at 11,173-271 ft., tentatively identified as Pennsylvanian sand, developed a gas flow of 862,000 cu. ft. daily and recovered 150 ft. of 55°-gravity distillate, plus 90 ft. of drilling fluid cut with distillate.

Shell Oil Co. 1-RA State, Lea County wildcat in 31-18s-36e, was running electrical surveys with total depth at 12,418 ft. Drill-stem test open 3 hours at 12,387-418 ft. recovered water blanket and gas-cut salt water. Shell 1-CA State, 23-16s-36e, was drilling lime and shale at 12,271 ft.

Jake L. Hamon 1 Chambers, 1-12s-32e, had prospects of a new pay in the upper Wolfcamp. Drill-stem test from 8,439-75 ft. had gas in 6 minutes, estimated at 2,000,000 cu. ft. daily, and flowing oil in 36 minutes. Gage on the first hour was 26 bbl. of 50°-gravity oil. Location is on the northeast side of East Caprock (Pennsylvanian and Devonian), field of Lea County.

New explorations included Buffalo Oil Co. 1 Neal-State, located north of Moore-Devonian field, in 14-11s-32e. Projected depth was 10,500 ft.

Shell Oil Co. located its 2-A State in 2-11s-37e, for an 11,600-ft. test just south of production in Echols field.

SOUTHEAST NEW MEXICO SUCCESSFUL WILDCAT

Lea County: Cities Production Co. 1-AD State, 22-10s-32e, TD 9,916 ft., elev. 4,345 ft., Devonian 9,808 ft., IP 2,174 bbl. 44°-gravity oil, 1-in. choke, TP 75 psi., GOR 115 cu. ft.

SOUTHEAST NEW MEXICO WILDCAT FAILURE

Eddy County: U. S. Smelting, Refining & Mining Co. 1 O'Collatt, 1-23s-26e, dry, TD 2,065 ft.

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Mississippi

Commencement Field Discovery On Pump

JACKSON.—In northern Wilkinson County, Mississippi, the Commencement field discovery well, B. Serio-N. Germany 1 Leak, Section 30-5n-2w, has been completed on pump. On potential test the well pumped 96 bbl. of 39.8°-gravity oil per day. Completion is from perforations 6,545-50 ft. opposite Wilcox sand. The northeast offset to this discovery, same operator's 1 George Armstrong, located across the county line in Adams County in Section 27-5n-2w, has also been completed. On potential test, this well flowed 142 bbl. of 39.8°-gravity oil per day through 10/64-in. choke with tubing pressure 480 psi. Production is from perforations 6,540-44 ft. opposite the top part of the Baker sand zone of the Wilcox. The southeast offset to the discovery well has been drilled to total depth of 6,726 ft. and casing is being run for completion tests. This well is the B. Serio-N. Germany 2 Judson Ratcliff, Section 30-5n-2w. It is reported that log and cores indicated oil sands at 6,514-24, 6,540-50, 6,554-62, and 6,708-10 ft.

The prospective new Wilcox discovery in the extreme southwest part of Franklin County, Mississippi, the Gulf Refining Co. 3 N. W. McCraine, Section 6-4n-1e, flowed 27 bbl. of oil plus 44 per cent salt water per day through 5/16-in. choke with tubing pressure ranging from zero to 50 psi. Pumping equipment is to be installed for final completion attempt.

In Monroe County, Mississippi, approximately 6 miles northeast of Muldon field, Shell Oil Co. 1 Mrs. Lee Harrington, Section 25-14s-6e, ran a drill-stem test at 3,908-41 ft. using ⅜-in. bottom and ¼-in. top chokes. Tool was left open 1 hour and 20 minutes with recovery being only 120 ft. of gas-cut mud. Bottom hole pressure was only 125 psi. flowing and 1,625 psi. shut in. Hole was then drilled ahead and another drill-stem test was run at 4,088-107 ft. using same chokes. Tool was left open 1 hour with only a weak blow developing at the surface. Recovery from the test was only 30 ft. of slightly gas cut mud. Bottom hole flowing pressure was zero. It will be recalled that this wildcat showed as a possible gas discovery on previous drill-

stem test at 3,514-51 ft. in the Hartselle (Miss.) sand section.

MISSISSIPPI SUCCESSFUL WILDCATS

Adams County: B. Serio-Norman Germany 1 Geo. Armstrong, 27-5n-2w, TD 6,724 ft., IP flowed 142 bbl. of oil in 24 hours on 10/64-in. choke, 39.8° gravity.

B. Serio-Norman Germany 1 Thaddeus Leak, 30-5n-2w, TD 7,010 ft., pumped 96 bbl. of oil per day, 39.8° gravity.

MISSISSIPPI WILDCAT FAILURES

Chickasaw County: Justiss-Mears 1-A, J. W. Clarke, 19-12s-2w, dry, TD 4,064 ft.

Copiah County: Geo. Koch-Vasser Drilling Co. 1 W. W. Broome, 12-9n-8e, dry, TD 6,709 ft.

Jefferson County: R. H. Alagood-L. Cashion Co. 1 James McClure et al, 28-8n-1e, dry, TD 6,215 ft.

Jones County: Gulf Refining Co. 1 Jones County "F," 16-9n-10w, dry, TD 13,161 ft.

Rankin County: Lion Oil Co. 1 Delco, 17-8n-5e, dry, TD 11,704 ft.

Stone County: Crow Drilling Co.-S. P. Borden 1 Wilbe Lumber Co. 34-2s-12w, dry, TD 8,522 ft.

Wilkinson County: Serio-Bulmon & Johns 1 Mrs. G. M. Hall, 18-2n-1w, dry, TD 8,510 ft.

ALABAMA WILDCAT FAILURE

Covington County: Crow Well Service-W. Gunn-E. Wilson 1 J. B. Ramer, 23-5n-18e, dry, TD 4,011 ft.

Oklahoma

Coal County Wildcat Makes Good Oil Flow

SOHIO PETROLEUM CO. and Beach & Talbot are completing their new discovery well northwest of Tupelo, in western Coal County, following a preliminary drill-stem test of casing perforations at 6,884-90 ft. and 6,907-17 ft., opposite Bromide sand. In the test, the well flowed more than 25 bbl. of oil per hour, making 206 bbl. in 8 hours and 10 minutes.

The well, 1 Guth, located in the NW SE NW 22-2n-8e had been drilled to 7,531 ft. in the Oil Creek section, topped at 7,312 ft. Top of the Bromide had been logged at 6,738 ft., and McLish sand at 7,025 ft. McLish sand carried some oil showings but the Oil Creek was dry. Casing was run through all these zones to 7,500 ft. Location of the well, a rank wildcat, is 5 miles east of the Fitts field, in eastern Pontotoc County.

Sinclair Oil & Gas Co.'s discovery well, 1 Community-Smith, C SW NW 17-5n-4w, 5 miles northwest of Lindsay in southern McClain County, flowed 1,463 bbl. of oil in 18 hours through ½ and ¾-in. chokes on a final completion gage. Gas flow was at the rate of 4,770,000 cu. ft. per day. Production is from casing perforations at 11,278-305 ft., opposite McLish sand. Total depth is 12,495 ft. with casing run to 12,169 ft., and hole plugged to 11,360 ft. Location is 2 miles northwest of the North Lindsay field and about the same distance southeast of the Northeast Bradley field.

Arbuckle lime production is being proved in Mid-Continent Petroleum Corp.'s recently opened Northwest Tipton pool, in Jackson County, southern Oklahoma. Mid-Continent's 3 Sue Richardson, NE SW SE 30-1n-19w, flowed at rates up to 50 bbl. of oil per hour during an initial production test

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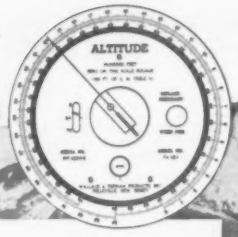

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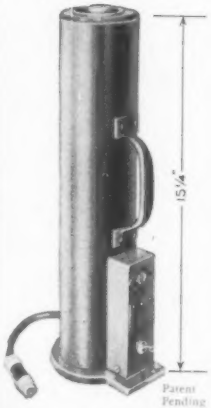

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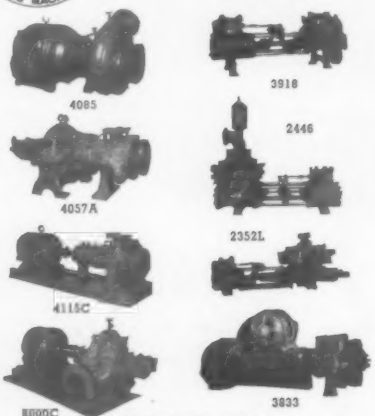

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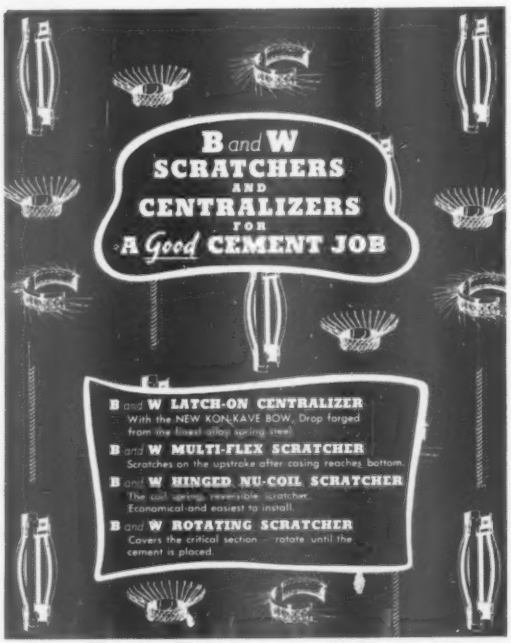
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of that zone, opposite which casing is perforated at 2,508-26 ft. A 6-hour gage was 242 bbl. Production of the two previously completed wells in the pool is from Strawn granite wash at 2,400 to 2,500 ft. The new Arbuckle producer is a location north of the discovery well. It also had favorable showings in the granite wash.

Mid-Continent has another indicated producer, its fourth for the pool at its 2 Moon, NW NE NE 31-1n-19w, diagonal southeast offset to the discovery. This well also had promising oil showings in Arbuckle lime, which will be tested. Total depth is 2,573 ft. with top of the Arbuckle at 2,568 ft. Favorable showings also were encountered in the granite wash section.

OKLAHOMA SUCCESSFUL WILDCATS

Kay County: Manahan Oil Co. 1 Bowman, SW SW NW 35-27n-1e, pumped 15 bbl. of oil from 1st Wilcox 4,012-16 ft., TD 4,131 ft.

Noble County: Fordee-Rhoades Oil Co. 1 Lyhane, NW SW SE 24-23n-2w, flowed 150 bbl. of oil from 1st Wilcox 4,752-58 ft., TD 4,758 ft.

Oklahoma County: Ashland Oil & Refining Co. 1 Meyer, SW NW SW 22-14n-1e, flowed 25 bbl. of oil from lower Skinner 4,995-5,007 ft., TD 5,615 ft.

OKLAHOMA WILDCAT FAILURES

Beaver County: Warren-Bradshaw Exploration Co. 1 Atkins, C NE NW 25-3n-25eCM, dry, TD 7,740 ft.

Garfield County: Powell-Stratford-Hayward Drilling Co. 1 Honeywell, SE SW SW 14-22n-3w, dry, TD 1,510 ft.

Grant County: Parker Drilling Co. 1 Krejsek, SW SW NE 31-29n-5w, dry, TD 4,061 ft.

Greer County: An-Son Petroleum Corp. 1 Ware, SW NW NW 30-4n-22w, dry, TD 4,757 ft

Lincoln County: Viersen & Cochran 1 Umpleby,, NE SW SW 29-13n-3e, dry, TD 4,781 ft.

Davon Oil & Gas Co. 1 Little, NE NE SW 13-13n-4e, dry, TD 4,278 ft.

Okfuskee County: Earl Sadler 1 Morgan, NW SW SW 32-12n-8e, dry, TD 3,721 ft.

Washita County: Petco Corp. 1 Church, C SW NE 18-8n-19w, dry, TD 6,521 ft.

Texas Gulf Coast

New Field Opened in Galveston County

HOUSTON.—Flowing at the rate of 272 bbl. of 42°-gravity oil per day on 9/64-in. choke, John W. Mecom has reported official potential on 8-B Maco Stewart to open a new field approximately 1½ miles south of Gillock field production, Galveston County. Completion was finaled through perforations at 8,780-84 ft. in the Frio zone with top of pay called at 8,736 ft. The discovery was potentialed under tubing pressure of 1,625 psi. and casing pressure of 1,800 psi., no water, to register gas-oil ratio of 899:1. Well is bottomed at 10,163 ft. with 5½-in. production string cemented at 9,952 ft. and 2⅜-in. tubing swung at 8,744 ft. The new pool opener is on the W. K. Wilson Survey, A-208, 4 miles south of Dickinson. Location for the confirmation test has been announced as John W. Mecom & A. L. Selig 1 J. J. Sweeney Est., 660 ft. south of 8-B discovery well. The proposed 10,500-ft. venture is on the S. F. Austin Survey, A-4.

Phillips Petroleum Co.'s new deep pay discovery for Wilson Creek field in Matagorda County extends production south-southeast of established production in the area. The 3 Stoddard opened new pay through 40 perforations in the Frio zone at 11,229-239 ft. and originally made 393.6 bbl. of 55.2°-gravity oil on 24-hour potential test on 10/64-in. choke under tubing pressure of 4,750 psi. Top of pay was called at 11,229 ft. Because of high gas-oil ratio, which registered 3,950:1 on potential test, well was later reclassified as a gas-distillate producer. Retest in October of this year showed well to be good for 5,400,000 cu. ft. of gas per day on absolute open flow, gas-liquid ratio 3,860:1, and 55.2°-gravity distillate with shut-in pressure 4,990 psi. Hole was made to 13,480 ft. to mark the deepest depth for any venture in the area and plugged back to 11,479 ft. with 5½-in. production string cemented at 11,534 ft. with 300 sacks.

TEXAS GULF COAST (DISTRICTS 2 AND 3) SUCCESSFUL WILDCATS

Austin County: G. L. Reasor 1 M. Eben et al, Thos. Hill Sur., TD 11,048 ft., no gage, well on potential test.

Colorado County: Johnny Mitchell 1 Wm. W. Allen, E. S. Wooley Sur., TD 9,518 ft. shut-in gas well, no gage.

TEXAS GULF COAST (DISTRICTS 2 AND 3) WILDCAT FAILURES

Bee County: Sid Katz et al 1 T. G. Benson, J. S. Kiesenker Sur., dry, TD 5,139 ft.

Brazoria County: Gaoline Production Corp. et al 1 J. F. Schmacher, T. K. Davis Sur., dry, TD 9,514 ft.

Calhoun County: American Liberty Oil Co. 2 Little, Wm. Little Sur., dry, TD 7,996 ft.

Fort Bend County: 2nd M. E. Andrews, Ltd.

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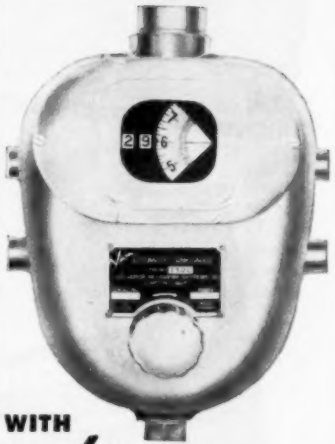

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1 J. M. Moore, James Beard Sur., dry, TD 6,515 ft.

Sunray Oil Corp. 1 Clyde Nelson, Geo. W. Cartwright Sur., dry, TD 7,812 ft.

D. M. Wallace 1 F. W. Neuhaus, Wm. Pettus Lge., dry, TD 5,555 ft.

Galveston County: John W. Mecom & Berkshire Oil Co. 2 Mrs. F. King et al, Wm. Scott Lge., dry, TD 6,976 ft.

Stanolind Oil & Gas Co. 1 Cecil Brown, Sarah McKissack, Sur., dry, TD 13,024 ft.

Sun Oil Co. 3 State Tract 179, State of Texas Sur., dry, TD 10,675 ft.

Harris County: Beersheba Corp. 1 G. E. Seureau, Wm. P. Harris Sur., dry, TD 9,578 ft.

Karnes County: George & Wrather Oil Co. 1 A. C. Gideon, S. Martinez Sur., dry, TD 4,414 ft.

Live Oak County: Sorelle & Sorelle 1 V. E. Kessler et ux, Refugio Co. School Land Sur., dry, TD 4,128 ft.

Montgomery County: W. R. Godsey 1 Sealy Smith Foundation, Thos Curry Sur., dry, TD 6,020 ft.

Newton County: F. A. Callery, Inc. 1 H. T. Davis et al J. M. Scott Sur., dry, TD 11,475 ft.

Orange County: Thomas Jordan, Inc. 1 L. L. Williams et al, T&NO Sur., dry, TD 8,421 ft.

Charles B. Wrightsman 1 Southern Petroleum Co., Susan Frazier Sur., dry, TD 9,528 ft.

Refugio County: Holly Development Co. 1 Johnson-Strauch, John & Pugh, Sur., dry, TD 8,515 ft.

Central Area

ILLINOIS

Ashland Oil & Refining Co. is confirming its recent Waltersburg discovery in the area 3 miles northeast of Maunie, in White County. Its second well, 1 Henning, SE NE SW 19-5s-14w, west offset to the discovery well, also found good saturation in the same pay zone, logged at 2,304-16 ft., and is starting production tests with bottom of the casing at 2,305 ft. Total depth is 2,318 ft. The discovery well, with pay at 2,302-13 ft. was completed pumping 183 bbl. of oil per day. Ashland already has started two additional wells, one a south offset to the discovery well, and the other a southwest diagonal offset. L. D. Turner and associates are drilling at a location a half mile northeast.

The Texas Co. 1 Lane, SE NW NE 35-5s-6e, outpost well for the Dale Consolidated field in the area 2½ miles southeast of McLeansboro, Hamilton County, is being completed on the pump making 40 bbl. of net oil per day with approximately 100 bbl. of water. Pay is McClosky lime at 3,337-54 ft.

INDIANA

Calvert Drilling, Inc., 1 Guenther, SW SE SE 19-4s-13w, 1¼ miles from production in the area 2 miles northeast of New Harmony, northwestern Posey County, is being completed on the pump, making 162 bbl. of net oil and 180 bbl. of water per day on a late gage. Production is from McClosky lime at 2,880-86 ft. and 2,934-38 ft.

Francis L. Beard 1 Campbell-Kime, NW NE NE 5-1s-9w, east of Union, Pike County, and ½ mile from production in the Union-Bowman field, pumped 154 bbl. of oil per day natural at completion in Aux Vases lime at 1,623-28.

WESTERN KENTUCKY

Slagter Producing Co. has a new Benoist sand discovery in northern Henderson Coun-

ty where its 1 Frances Critzer, SE SE SE 11-Q-25, recovered 910 ft. of clean oil and 120 ft. of mud-cut oil in a 60-minute drill-stem test of saturation logged at 1,999-2,010 ft. In the test, gas was at the top in 17 minutes. Casing has been run to 1,998 ft. for completion. Location is a mile northwest of Spottsville and about 2¾ miles northeast of the Spottsville field, nearest production.

EASTERN KENTUCKY

On Right Fork of Hurricane Creek in the Pike County sector of Big Sandy gas field, Columbian Carbon Co. is drilling ahead at 2,680 ft. on 3 V. P. Ratliff. Top of Big lime was picked at 2,433 ft. and gas from 2,673-80 ft. gaged 607,000 cu. ft. gas daily. Test is an old well being drilled deeper.

Also in the Pike County sector of Big Sandy gas field, United Fuel Gas Co. has deepened 2 Kelsie Childers. Devonian brown shale has been topped at 3,350 ft. and upon being penetrated to a total depth of 4,145 ft. well gaged natural 747,000 cu. ft. of gas daily with a rock pressure of 520 psi. Best gas was logged from 3,977-4,007 ft.

MICHIGAN

A likely looking Traverse zone gas and oil pay was under test at C. W. Collin 1 May et al, NE NW SE 26-15n-7w, Sheridan Township wildcat, Mecosta County. Top of Traverse lime was logged at 3,298 ft. Gas started to show at about 3,368-69 ft. and flow was estimated from a quarter to a half million cubic feet a day. A long string of 5-in. casing was run on a packer with a perforated bottom joint at 3,369 ft. Well was then deepened a foot at a time to present depth, 3,375 ft. An increase in gas was reported at 3,371 and at 3,374 ft. which had doubled to an estimated open flow of about a half million cubic feet a day. From 3,374-75 ft. some oil was logged, but on bailer test after standing 1 hour, it was difficult to determine exact amount of oil showing. Field level was found to be about 250 ft. off bottom. It was believed that this might be all fluid, but it was also possible that the gas showing was activating the fluid to that point. However, it was reported that well appeared to be filling up, but no further test was run after these oil and gas increases were logged. It had not been determined as to whether well would be acidized or deepened up to the time of this report. Wildcat was originally scheduled to be drilled to the Dundee at about 3,700 ft.

On the basis of preliminary natural tests, the first follow-up to West Branch field Richfield oil discovery well, the east 40-acre offset, appeared to be a better well than the discovery. This new test, the Charles Morley 1 Harrington, C SW SE 17-22n-1e, Ogemaw Township, Ogemaw County, was bottomed out in the Richfield at 4,241 ft. and hole carried from 1,200-1,500 ft. free oil natural in 48 hours, swabbing natural at a rate of about 8 bbl. a day, while the discovery showed for about only 4 bbl. of oil a day natural. Acid treatment was being scheduled.

ILLINOIS WILDCAT FAILURES

Bond County: J. C. Nickerson 2 Rhodes-Armer, NW SE NE 33-4n-3w, dry, TD 1,100 ft.

Clinton County: R. H. Robben 1 Zimmerman, NW NE NE 12-1n-3w, dry, TD 1,103 ft.

F. L. Goldsmith 1 Remmert, SW NE NE 33-3n-2w, dry, TD 1,109 ft.

Edwards County: Paco Petroleum Co. 1 Bunting, SW SW SW 24-1s-10e, dry, TD 3,336 ft.

Fayette County: Nash Redwine 1 Casey, NE NW SE 26-9n-2e, dry, TD 1,954 ft.

Franklin County: George & Wrather 1 Buck-

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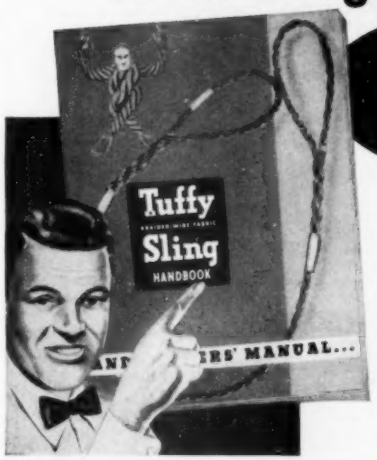

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Firm Name_____

By_____ Title_____

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ner, SE NW NE 20-6s-2e, dry, TD 2,792 ft.

Hamilton County: Superior Oil Co. 1 Scribner, SE SE NW 22-5s-5e, dry, TD 3,478 ft.

C. E. Brehm-Oil Management 1 Rhine, SW SW NW 2-7s-6e, dry, TD 3,398 ft.

Jefferson County: Petro Drilling Co. 1 Glen, SE NW NE 35-3s-3e, dry, TD 2,987 ft.

McGraw & Hughes Petroleum Co. 1 Cockrun, SW NW SW 19-4s-4e, dry, TD 3,175 ft.

Randolph County: H. F. Robison 1 Buckhorn, C N½ SE SW 6-6s-6w, dry, TD 2,301 ft.

Wabash County: F. L. Beard 1 Fox, NE NW NW 32-2n-12w, dry, TD 2,400 ft.

Wayne County: R. Sipoha, Jr., 1 Preiss, SW NE SW 2-1s-5e, dry, TD 3,180 ft.

White County: N. C. Neilsen 1 Johnson et al, NE NE NE 30-4s-10e, dry, TD 3,341 ft.

INDIANA SUCCESSFUL WILDCATS

Gibson County: Morris Drilling Co. 1 McRoberts, Military Donation 89-1s-10w, IP 100 bbl., Benoist sand 1,645-55 ft., TD 1,655 ft. (discovery well Kolb North pool).

E. Barker et al 1 Tate, SW SW NW 16-2s-10w, IP 121 bbl., Rosiclare 2,094-2,102 ft., TD 2,150 ft. (links Princeton North and Princeton South pools).

E. J. Cunningham 1 Wilders, NW NW SE 17-2s-9w, IP 50 bbl., Aux Vases lime 1,724-28 ft., TD 1,729 ft. (extends Francisco pool).

Pike County: George C. Schoonmaker 1 Beck, SW NE SW 23-1s-8w, IP 2,500,000 cu. ft. gas, Pennsylvanian 888-96 ft., TD 1,534 ft. (discovery well Harmon West gas pool).

INDIANA WILDCAT FAILURES

Gibson County: Stanford Oil Co. 1 Ziliak, NW NE SE 18-4s-10w, dry, TD 2,350 ft.

Noah Petroleum Co. 1 Burton, NE SW SW 22-2s-10w, dry, TD 2,130 ft.

H. Sanders 1 Beasley, SE NE NW 9-2s-9w, dry, TD 1,800 ft.

Graham Development Co. 1 White-Key-Witherspoon, NW SW SE 30-1s-10w, dry, TD 2,035 ft.

W. C. McBride 1 Troutman, Military Donation 77-1s-10w, dry, TD 1,880 ft.

Putnam County: J. Walker 1 Kocher, S½ NE NE SW 17-14n-4w, dry, TD 1,031 ft.

Sullivan County: T. & H. Corp. 1 Gilbert, NE SW NW 29-7n-8w, dry, TD 2,502 ft.

W. W. Toler 1 Shake, S½ SW SE NE 27-8n-9w, dry, TD 2,190 ft.

H. F. Gibson 1 Davis, NW NW NW 16-9n-8w, dry, TD 2,108 ft.

Vigo County: Great Lakes Carbon Co. 1 Hilbert, NE NW NW 25-10n-11w, dry, TD 2,459 ft.

T. M. Egan 1 Lessman, SW SW SW 35-10n-8w, dry, TD 2,006 ft.

WESTERN KENTUCKY SUCCESSFUL WILDCAT

Daviess County: Felmont Oil Corp. 2 Parker, SE NE SE 22-O-26, IP 200 bbl., Aux Vases 2,164-72 ft., TD 2,388 ft. (opens new pay zone Elba North pool).

WESTERN KENTUCKY WILDCAT FAILURES

Daviess County: S. McIntosh 1 Potts, NE NW SW NE 15-Q-31, dry, TD 1,091 ft.

Henderson County: Tuley & Carter 1 Whitledge, NE SE NW NE 5-O-23, dry, TD 2,725 ft.

Muhlenberg County: G. S. Engle 1 First State Bank, WL SW NE NE 23-1-28, dry, TD 1,703 ft.

MICHIGAN WILDCAT FAILURES

Allegan County, Clyde Township: P. K. Degenther 1 U. S. A., SE NW SW 25-2n-15w, Traverse 1,274 ft., dry, TD 1,285 ft.

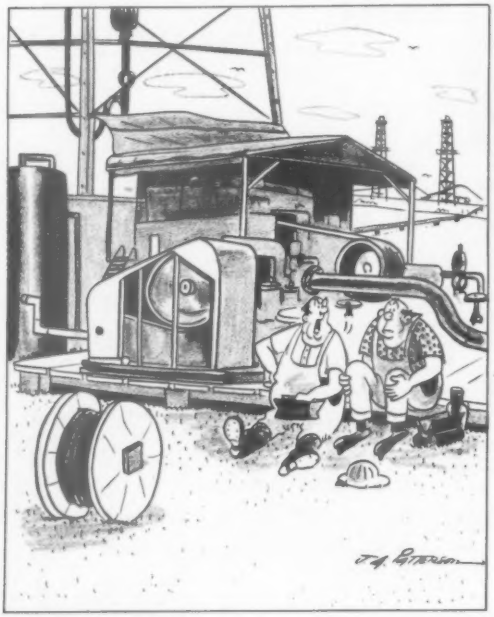
Oceana County, Ferry Township: Ford Oil Co. 1 Houghton, SE SE SE 10-14n-16w, Traverse 2,150 ft., dry, TD 2,155 ft.

St. Clair County, Columbus Township: Panhandle Eastern Pipeline Co. 1 Stevenson, C NW 35-5n-15e, dry in Niagaran, TD 3,005 ft.

Southwest Texas

New Strike Revealed In Nueces County

CORPUS CHRISTI — New discovery was revealed by Phillips Petroleum Co. at their 1 State Tract 750, wildcat in Nueces County. Production was effected through perforations 5,972-77 ft. and on 16-hour test well flowed rate of 106 bbl. of oil per day on ½-in. choke. Tubing pressure recorded was 475 psi. with oil having gravity of 42° and gas-oil ratio of 620:1. New producer is giving crude from the Sinton sand zone. At present time operators are still testing and will potential this week. Well was drilled to a total depth 9,000 ft. with 5½-in. production string cemented to 6,900 ft. Before setting pipe, drill-stem was run on section 5,977-81 ft. which gave up 700 ft. of pipe-line oil with surface pressure 95 psi. and bottom-hole



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pressure 1,785-2,850 psi. Drill-stem test was run on section 6,137½-41 ft. and on ¾-in. choke, well flowed under 860 psi. of working pressure with recovery being 30 ft. of straw colored distillate having 55° gravity and 6,000 ft. of salt water with bottom-hole pressure 2,275-2,875 psi. Operators cut many cores but the section 5,972-77 ft. had the most porosity and best saturation. New discovery is located on the Nueces Bay Tract 750, 2½ miles northwest of Corpus Christi.

Rowan, Hope and E. W. Gill, San Antonio operators, have filed for a deep test to be drilled as the 1 L. H. Mitchell, in Wilson County, approximately 4 miles southwest of Floresville. Location of drill site will be on the Karnes County School Land Survey, A-187. Operator will attempt production in the Edwards limestone section at about 5,800 ft., and operations are scheduled to commence immediately.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) SUCCESSFUL WILDCATS

Duval County: Geo. H. Coates 1 Salomon Chapa, 2½ miles N NE Tabasco, TD 7,162 ft., 149.9 bbl. of oil per day on 8/64-in. choke, 46.1° gravity.

Hidalgo County: La Gloria Corp. 1 La Blanca gas unit 2, LeBlanca & Llano Grande Grants, TD 11,000 ft., open flow 25,500,000 cu. ft. of gas plus 68 bbl. of 59.8°-gravity oil.

McMullen County: Alaska Steamship Co. and Newman Bros. Drilling Co. G-3 South Texas Syndicate, BS&F Sur., Sec. 13, A-100, TD 6,152 ft., 18,000,000 cu. ft. of gas by actual test 19.5 bbl. of 64°-gravity oil per 1,000,000 cu. ft. of gas.

Webb County: Laurel Petroleum Co. 1-A Laurel Unit, 5 miles N Oilton, TD 2,255 ft., IPF 18.67 bbl. of oil per day on pump, 49°-gravity, gas-oil ratio nil.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) WILDCAT FAILURES

Aransas County: Union Producing Co. 1

(Continued on page 195)

California

Pliocene Pool Develops At Rapid Pace in Kern

LOS ANGELES. — Development of the shallow Pliocene sand pool on the eastern side of Lost Hills field, Kern County, has progressed to a point where about three new producers are being added weekly.

The 16 wells completed since the pool's discovery in mid-August have expanded its productive limits to about ¾-mile long and over ¼-mile wide. Four rigs are at work seeking to extend production further. Average production of the 2,800 to 3,000-ft. wells is about 100 bbl. daily.

Superior Oil Co., whose 1 Lost Hills in 18-26s-21e was the discovery well, has completed five producers. Other companies active in the development are Richfield Oil Corp., General Petroleum Corp., Tide Water Associates Oil Co., and Universal Consolidated Oil Co. The latter's 115 "Well" was under way as a southeast extension attempt.

General Petroleum Corp. recompleted the north offset to its Jewett sand discovery in the Edison area as a deeper producer in the upper Pyramid Hills sand. Completed about a month ago at 4,955-80 ft., 41-X-9 Graham was killed and then recompleted through perforations at 4,990-5,020 ft. On a 13-hour test the well flowed 133 bbl. of 41.6-gravity crude. Location of the new zone discovery is in NE NW 9-30s-29e.

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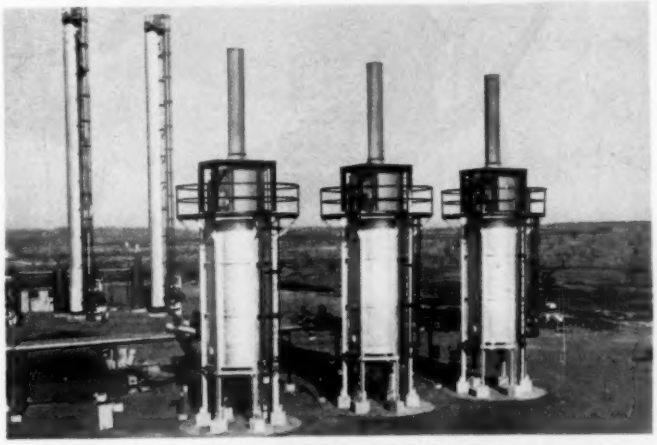

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ty where its 1 Frances Critzer, SE SE SE 11-Q-25, recovered 910 ft. of clean oil and 120 ft. of mud-cut oil in a 60-minute drill-stem test of saturation logged at 1,999-2,010 ft. In the test, gas was at the top in 17 minutes. Casing has been run to 1,998 ft. for completion. Location is a mile northwest of Spottsville and about 2¾ miles northeast of the Spottsville field, nearest production.

EASTERN KENTUCKY

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Also in the Pike County sector of Big Sandy gas field, United Fuel Gas Co. has deepened 2 Kelsie Childers. Devonian brown shale has been topped at 3,350 ft. and upon being penetrated to a total depth of 4,145 ft. well gaged natural 747,000 cu. ft. of gas daily with a rock pressure of 520 psi. Best gas was logged from 3,977-4,007 ft.

MICHIGAN

A likely looking Traverse zone gas and oil pay was under test at C. W. Collin 1 May et al, NE NW SE 26-15n-7w, Sheridan Township wildcat, Mecosta County. Top of Traverse lime was logged at 3,298 ft. Gas started to show at about 3,368-69 ft. and flow was estimated from a quarter to a half million cubic feet a day. A long string of 5-in. casing was run on a packer with a perforated bottom joint at 3,369 ft. Well was then deepened a foot at a time to present depth, 3,375 ft. An increase in gas was reported at 3,371 and at 3,374 ft. which had doubled to an estimated open flow of about a half million cubic feet a day. From 3,374-75 ft. some oil was logged, but on bailer test after standing 1 hour, it was difficult to determine exact amount of oil showing. Field level was found to be about 250 ft. off bottom. It was believed that this might be all fluid, but it was also possible that the gas showing was activating the fluid to that point. However, it was reported that well appeared to be filling up, but no further test was run after these oil and gas increases were logged. It had not been determined as to whether well would be acidized or deepened up to the time of this report. Wildcat was originally scheduled to be drilled to the Dundee at about 3,700 ft.

On the basis of preliminary natural tests, the first follow-up to West Branch field Richfield oil discovery well, the east 40-acre offset, appeared to be a better well than the discovery. This new test, the Charles Morley 1 Harrington, C SW SE 17-22n-1e, Ogemaw Township, Ogemaw County, was bottomed out in the Richfield at 4,241 ft. and hole carried from 1,200-1,500 ft. free oil natural in 48 hours, swabbing natural at a rate of about 8 bbl. a day, while the discovery showed for about only 4 bbl. of oil a day natural. Acid treatment was being scheduled.

ILLINOIS WILDCAT FAILURES

Bond County: J. C. Nickerson 2 Rhodes-Armer, NW SE NE 33-4n-3w, dry, TD 1,100 ft.

Clinton County: R. H. Robben 1 Zimmerman, NW NE NE 12-1n-3w, dry, TD 1,103 ft.

F. L. Goldsmith 1 Remmert, SW NE NE 33-3n-2w, dry, TD 1,109 ft.

Edwards County: Paco Petroleum Co. 1 Bunting, SW SW SW 24-1s-10e, dry, TD 3,336 ft.

Fayette County: Nash Redwine 1 Casey, NE NW SE 26-9n-2e, dry, TD 1,954 ft.

Franklin County: George & Wrather 1 Buck-

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pressure 1,785-2,850 psi. Drill-stem test was run on section 6,137½-41 ft. and on ¾-in. choke, well flowed under 860 psi. of working pressure with recovery being 30 ft. of straw colored distillate having 55° gravity and 6,000 ft. of salt water with bottom-hole pressure 2,275-2,875 psi. Operators cut many cores but the section 5,972-77 ft. had the most porosity and best saturation. New discovery is located on the Nueces Bay Tract 750, 2½ miles northwest of Corpus Christi.

Rowan, Hope and E. W. Gill, San Antonio operators, have filed for a deep test to be drilled as the 1 L. H. Mitchell, in Wilson County, approximately 4 miles southwest of Floresville. Location of drill site will be on the Karnes County School Land Survey, A-187. Operator will attempt production in the Edwards limestone section at about 5,800 ft., and operations are scheduled to commence immediately.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) SUCCESSFUL WILDCATS

Duval County: Geo. H. Coates 1 Salomon Chapa, 2½ miles N NE Tabasco, TD 7,162 ft., 149.9 bbl. of oil per day on 8/64-in. choke, 46.1° gravity.

Hidalgo County: La Gloria Corp. 1 La Blanca gas unit 2, LeBlanca & Llano Grande Grants, TD 11,000 ft., open flow 25,500,000 cu. ft. of gas plus 68 bbl. of 59.8°-gravity oil.

McMullen County: Alaska Steamship Co. and Newman Bros. Drilling Co. G-3 South Texas Syndicate, BS&F Sur., Sec. 13, A-100, TD 6,152 ft., 18,000,000 cu. ft. of gas by actual test 19.5 bbl. of 64°-gravity oil per 1,000,000 cu. ft. of gas.

Webb County: Laurel Petroleum Co. 1-A Laurel Unit, 5 miles N Oilton, TD 2,255 ft., IPF 18.67 bbl. of oil per day on pump, 49°-gravity, gas-oil ratio nil.

SOUTHWEST TEXAS (DISTRICTS 1 & 4) WILDCAT FAILURES

Aransas County: Union Producing Co. 1

(Continued on page 195)

California

Pliocene Pool Develops At Rapid Pace in Kern

LOS ANGELES. — Development of the shallow Pliocene sand pool on the eastern side of Lost Hills field, Kern County, has progressed to a point where about three new producers are being added weekly.

The 16 wells completed since the pool's discovery in mid-August have expanded its productive limits to about ¾-mile long and over ¼-mile wide. Four rigs are at work seeking to extend production further. Average production of the 2,800 to 3,000-ft. wells is about 100 bbl. daily.

Superior Oil Co., whose 1 Lost Hills in 18-26s-21e was the discovery well, has completed five producers. Other companies active in the development are Richfield Oil Corp., General Petroleum Corp., Tide Water Associates Oil Co., and Universal Consolidated Oil Co. The latter's 115 "Well" was under way as a southeast extension attempt.

General Petroleum Corp. recompleted the north offset to its Jewett sand discovery in the Edison area as a deeper producer in the upper Pyramid Hills sand. Completed about a month ago at 4,955-80 ft., 41-X-9 Graham was killed and then recompleted through perforations at 4,990-5,020 ft. On a 13-hour test the well flowed 133 bbl. of 41.6-gravity crude. Location of the new zone discovery is in NE NW 9-30s-29e.

FOR

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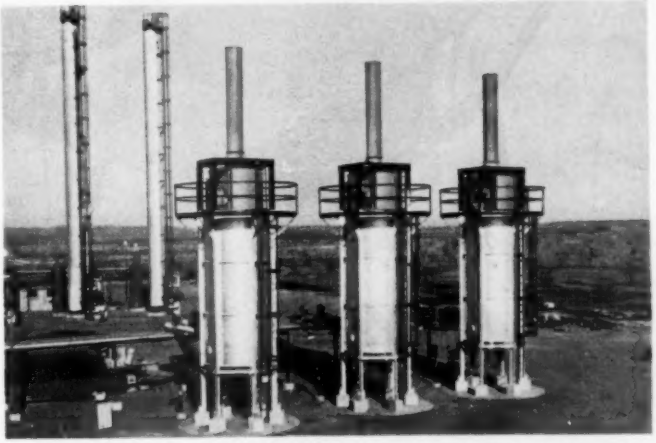
Struthers Wells

FIRED HEATERS



The three Struthers Wells direct fired heaters illustrated are in use at a West Texas gasoline plant. Each has a capacity of 6,000,000 Btu per hour, at high thermal efficiency.

In applications listed above where indirect heating is utilized, the circulating medium may be Dowtherm or oil. Dowtherm may be used in vapor or liquid phase.

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Quick deliveries are available in an extensive line of standard sizes.

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Cast iron kettle is 19 in. in diameter, 12 in. deep. Complete unit is 3 ft. 11 in. long, 22 in. wide and 27 in. high. Total weight, 115 lbs.

With a COOK 'N' KETTLE, you can broil meats, fowl, game, fish and lobster. Even hamburgers and wieners provide a new taste treat. COOK 'N' KETTLE serves large or small groups equally well. The kettle is self-sterilizing. When you have finished cooking, put on the lid — no muss, no fuss and no cleaning necessary. By shutting off the draft, the fire goes out — saving much of your charcoal for the next time.

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You will not burn food in a COOK 'N' KETTLE for there are two dampers — one in the bottom of Kettle and one in lid — with which the draft is perfectly controlled. *Anyone* who will follow the simple directions, can become an expert barbecue chef.

IT'S PRACTICAL

because it cooks without flame, sealing in the rich juices, providing the most delicious food imaginable.

IT'S SIMPLE

because it requires practically no attention.

IT'S DIFFERENT

because heavy cast iron gives uniform heat.

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Humble Oil & Refining Co. was preparing to start a third deep Vedder zone test in the Rosedale area 10 miles west of Bakersfield. The new test, No. 11 Kern County Land-C in SW 14-29s-26e, will be on the northwest edge of the field, where Humble now has 15 Stevens sand producers. The company abandoned its 3 K.C.L. in NW Section 22 after drilling to 11,470 ft. The new test is expected to go to a similar depth.

At Wheeler Ridge, on the southeast edge of San Joaquin Valley, Standard Oil Co. of California's attempted extensioner to the Eocene sand pool appeared to be a failure. Its 356 K.C.L.-2, about ¾-mile southeast of Richfield's two 9,500-ft. Eocene producers, reportedly failed to find anything of importance on three formation tests below 10,000 ft.

CALIFORNIA SUCCESSFUL WILDCAT

Santa Barbara County, new pool discovery in Russell Ranch area: Richfield Oil Corp. 15-9 Russell A, NW SW 9-10n-27w, flowed 162 bbl. per day through perforations at 3,596-3,672 ft., 39.5° gravity 0.5 per cent cut, 12/64-in. bean, TD 4,190 ft., elev. 2,165 ft.

CALIFORNIA WILDCAT FAILURES

Humboldt County, Mattole River Valley area: Petroly Oil Co. 1 Petroly, 6-2s-2w, dry, TD 3,260 ft., elev. 275 ft.

Kern County, Buena Vista area: Golden Bear Oil Co. 1 Chelmsford, 17-31s-23e, dry, TD 7,317 ft.

Edison area: Trico Oil & Gas Co. 1 Behlow, 10-30s-29e, dry, TD 5,546 ft., elev. 590 ft.

Pattiway area: Universal Construction 1 Time Oil-S.K., 12-10n-24w, dry, TD 4,727 ft., elev. 2,758 ft.

Rosedale area: Union Oil Co. 34X-23 Smith, 23-29s-26e, dry, TD 10,617 ft., elev. 370 ft.

Santos Creek area: P. & S. Oil Co. 37-X-Theta, 29-28s-20e, dry, TD 1,736 ft., elev. 1,170 ft.

Tejon Hills area: Chanac Associates 1 Chanac, 4-11n-17w, dry, TD 100 ft., elev. 1,229 ft.

Kings County, Pyramid Hills area: Norris Oil Co. 1 Lucier, 29-24s-18e, dry, Eocene 752 ft., TD 778 ft., elev. unreported.

Monterey County, San Miguel area: J. C. Kimble, Operator 1 Garelli, 17-24s-12e, dry, TD 5,134 ft., elev. 812 ft.

Sacramento County, Freeport area: Standard Oil Co. 1 Shapard, 29-7n-5e, dry, TD 6,755 ft., elev. 35 ft.

Lambert area: D. D. Feldman Oil & Gas 1 National Gas Corp.-Kuhn, 6-5n-5e, dry, TD 7,501 ft., elev. 17 ft.

Rio Vista area: Amerada Petroleum Corp. 2 Upham, 26-3n-2e, dry, TD 5,350 ft.

San Benito County, Lomerias area: Trico Oil & Gas Co. 2 O'Connell, 4-12s-4e, dry, TD 2,624 ft., elev. 235 ft.

San Joaquin County, Galt-Lodi area: Union Oil Co. 1 Union-Brazos, Grussendorf, 7-4n-7e, dry, TD 4,804 ft., elev. 72 ft.

Santa Barbara County, Cuyama Valley area: Seaboard Oil Co. of Delaware 72-3 G.P.-Government, 3-11n-30w, dry, TD 2,735 ft., elev. 1,900 ft.

Cat Canyon area: Campbell, Kohlbush & Morton 1-24, 24-9n-33w, dry, TD 2,328 ft., elev. 624 ft.

Ventura County, Saticoy area: General Petroleum Corp. 1 S.P.S., 28-3n-21w, dry, TD 11,347 ft.

Yolo County, Pleasant Creek area: R. F. Oakes and E. E. Combs, et al 1 Rominger, 6-8n-1w, dry, TD 2,809 ft., elev. 201 ft.

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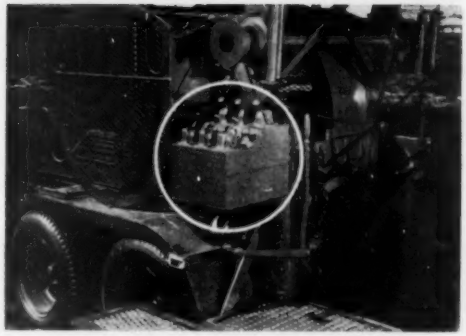
...First to offer a Tandem Axle,

...First with Double 15" Rotor Hydromatic Brakes,

...First with a V-belt Driven Spudding mechanism,

...First to install Leveling Jacks as standard equipment,

...And many others.



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The first completely air operated spudder ever built—a Walker-Neer Spudder, Model S-32 Special—is now operating near Wetumka, Oklahoma. Its owner, Joe Ben Barrett, Jr. (Barrett Drilling Co., Ardmore, Okla.), has this to say:

"It's so far ahead of anything else, it means a new era in cable tool operations. Walker-Neer has been the leader in cable tool equipment for a number of years, and this puts them even farther out in front. There's never been anything like this all-air-operated spudder—nothing else can compare with it. Everybody who sees it is tremendously impressed."

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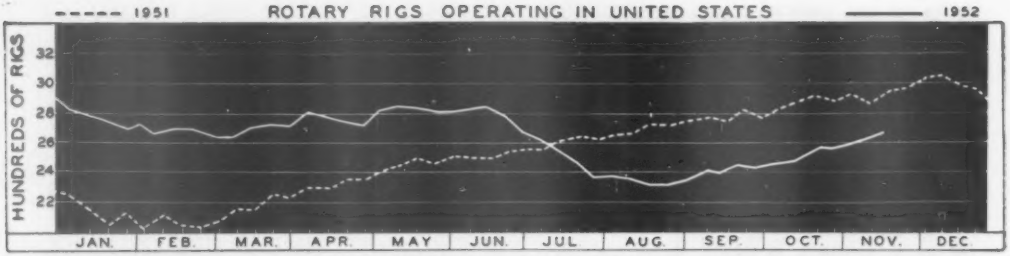
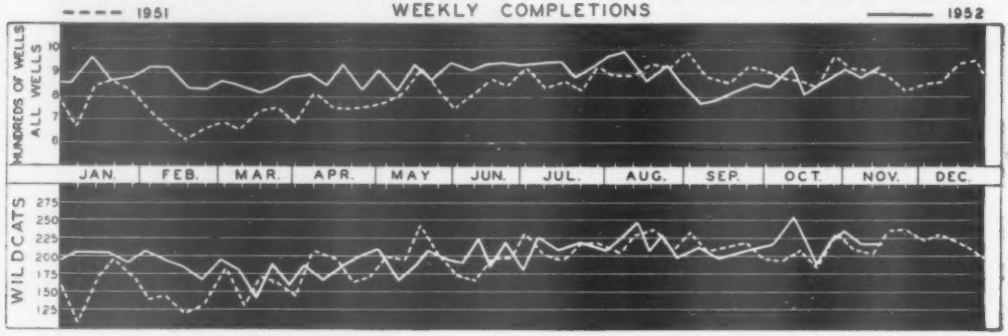




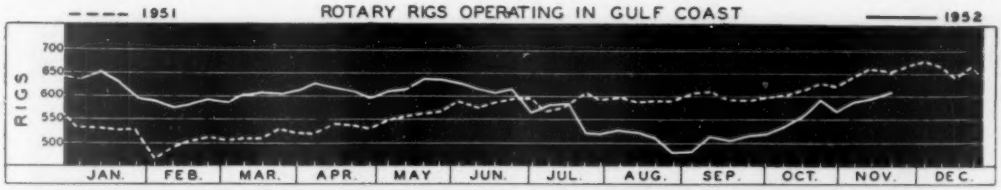
CURRENT STATISTICS

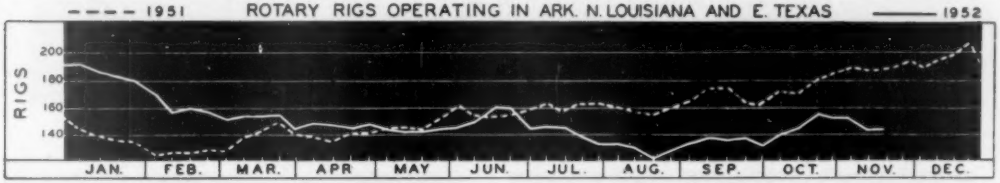
EXPLORATION

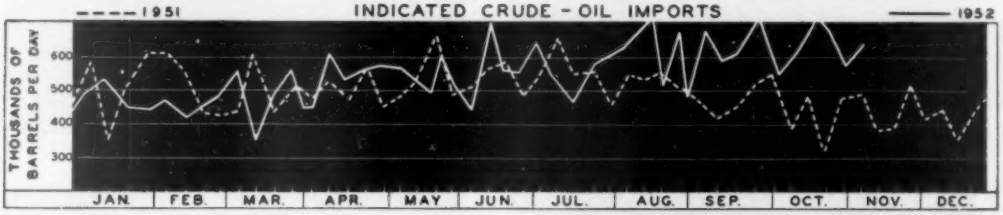
WEEKLY WELL COMPLETIONS . . . WEEK ENDED NOVEMBER 15, 1952

	Total of all wells					Nov. 15		Wildcat completions and discoveries					Cumulative total, 1952				
	Comp.	Oil	Gas	Dry	Footage	1952	1951	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	14	7	0	*7	22,550	687	571	0	0	0	0	0	0	0	0	2	2
Pennsylvania	39	19	5	†15	86,378	1,752	1,505	0	0	0	0	0	0	0	0	2	2
West Virginia	11	3	6	2	28,528	547	544	0	0	0	0	0	0	0	4	8	12
Ohio	19	10	1	‡8	39,010	887	854	0	0	0	0	0	2	0	8	17	27
Indiana	46	12	1	33	81,372	1,131	1,221	3	0	1	11	15	34	0	3	331	368
Kentucky	27	5	12	10	47,037	1,149	1,143	1	0	0	3	4	24	0	1	236	261
Illinois	50	16	0	34	125,466	1,822	2,168	0	0	0	14	14	23	0	1	505	529
Michigan	9	3	0	6	23,736	626	658	0	0	0	3	3	23	0	5	212	240
Kansas	79	41	4	34	260,999	4,007	3,879	2	0	0	10	12	89	0	14	658	761
Nebraska	4	1	1	2	16,932	280	199	0	0	1	2	3	11	0	3	155	169
Oklahoma	125	69	8	‡48	444,643	5,133	4,892	3	0	0	8	11	91	3	12	528	634
Texas	304	152	22	130	1,457,322	14,999	14,342	11	2	2	81	96	699	48	109	3,429	4,285
North Central (Dist. 7-B & 9)	103	47	1	55	333,759	4,765	4,323	8	0	0	34	42	395	2	24	1,393	1,814
West (Dist. 7-C & 8)	61	47	1	13	348,435	4,500	4,383	0	0	1	6	7	151	1	7	635	794
Panhandle (Dist. 10)	17	7	7	3	56,743	577	617	0	0	0	2	2	4	0	8	57	69
Eastern (Dist. 5 & 6)	8	1	0	7	34,235	788	1,034	0	0	0	6	6	18	5	4	209	236
Gulf Coast (Dist. 2 & 3)	64	30	8	26	420,720	2,259	1,989	1	0	1	17	19	65	27	30	504	626
Southwest (Dist. 1 & 4)	51	20	5	26	263,430	2,110	1,996	2	2	0	16	20	66	13	36	631	746
Louisiana	65	37	8	20	441,062	2,077	1,902	1	0	2	9	12	39	17	15	285	356
Northern	32	18	5	9	114,661	1,138	1,063	0	0	0	6	6	16	0	7	149	172
Southern	33	19	3	11	326,401	939	839	1	0	2	3	6	23	17	8	136	184
Arkansas	8	4	0	4	24,413	364	370	1	0	0	1	2	9	0	0	76	85
Mississippi	10	3	0	7	79,337	301	314	2	0	0	7	9	18	2	1	141	162
Southeastern States	3	2	0	1	16,221	63	46	0	0	0	1	1	3	0	1	33	37
Montana	6	4	0	2	24,766	299	203	0	0	0	1	1	7	0	1	76	84
Wyoming	9	7	0	2	56,794	607	652	0	0	0	1	1	21	0	4	117	142
Colorado-Utah	14	4	1	9	69,037	480	263	0	0	1	9	10	18	0	10	215	243
New Mexico	22	9	10	3	121,875	922	614	1	0	0	1	2	36	2	2	94	134
California	54	33	0	21	237,127	2,155	2,033	1	0	0	18	19	65	0	7	452	524
North Dakota	4	2	0	2	29,090	98	8	0	0	0	1	1	5	0	0	24	29
Miscellaneous	0	0	0	0	0	62	90	0	0	0	0	0	0	0	22	27	49
Total United States	922	443	79	400	3,733,695	40,448	38,471	26	2	7	181	216	1,217	72	223	7,623	9,135
Total previous week	879	410	63	406	3,429,220			26	1	4	186	217	1,191	70	216	7,442	8,919
Total November 17, 1951	896	455	68	373	3,327,156			42	2	7	184	235	1,379	72	224	7,411	9,086

Service wells included: *7, †12, ‡2.



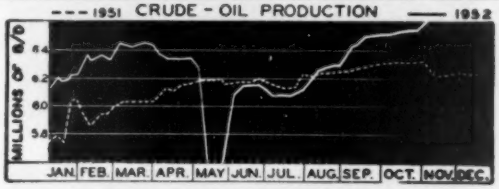


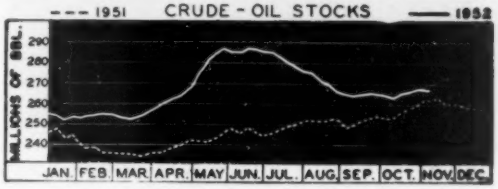


DAILY AVERAGE PRODUCTION FOR WEEK

	November 15, 1952			Nov. 8
	Crude oil	Lease condensate	Total	total
Alabama	3,100		3,100	3,200
Arkansas	75,050	600	75,650	75,800
California	986,300		986,300	987,550
Colorado	86,400		86,400	87,300
Eastern	57,700		57,700	57,800
Florida	1,525		1,525	1,525
Illinois	163,000		163,000	163,700
Indiana	33,400		33,400	33,700
Kansas	341,300		341,300	337,000
Kentucky	31,200		31,200	31,200
Louisiana	647,600	28,850	676,450	676,700
North	109,550	2,300	111,850	112,100
South	538,050	26,550	564,600	564,600
Michigan	42,000		42,000	38,000
Mississippi	91,400	3,800	95,200	94,900
Montana	27,800		27,800	28,000
Nebraska	8,200		8,200	8,800
New Mexico	172,675	450	173,125	173,225
Oklahoma	531,700		531,700	535,300
Texas	3,050,175	44,800	3,094,975	3,094,975
Dist. 1	39,100	250	39,350	39,350
Dist. 2	175,275	4,600	179,875	179,875
Dist. 3	494,975	24,200	519,175	519,175
Dist. 4	276,000	5,300	281,300	281,300
Dist. 5	54,150	250	54,400	54,400
Dist. 6	134,275	4,000	138,275	138,275
East Texas field	256,700		256,700	256,700
Dist. 7-B	118,625	100	118,725	118,725
Dist. 7-C	179,000	5,500	184,500	184,500
Dist. 8	1,049,775	275	1,050,050	1,050,050
Dist. 9	191,650	300	191,950	191,950
Dist. 10	80,650	25	80,675	80,675
Utah	5,600		5,600	5,700
Wyoming	194,000		194,000	196,000
North Dakota	8,500		8,500	10,000
Total U. S.	6,558,625	78,500	6,637,125	6,640,375
Change from previous week, down			3,250	
Canada	192,125		192,125	146,975
Total U. S. production January 1-November 15			1,985,416,325 bbl.	
Same period last year (crude plus cond.)			*1,965,542,700 bbl.	

*Includes 26,068,800 bbl. condensate.



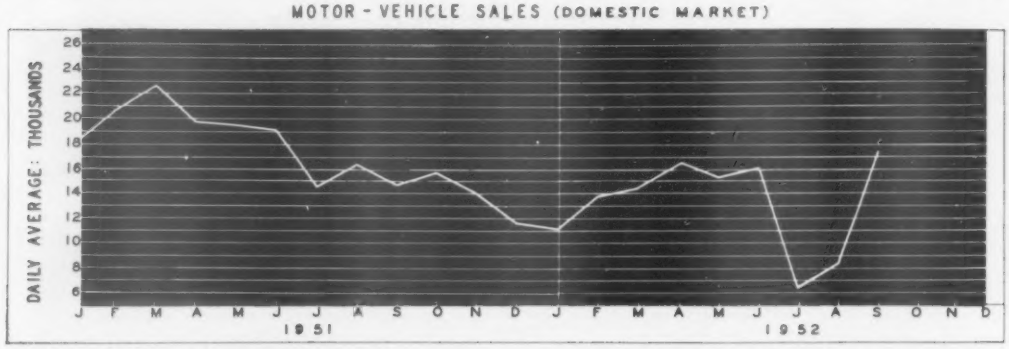


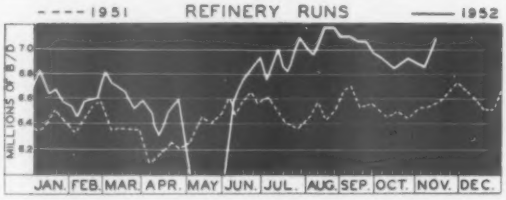
CRUDE-OIL STOCKS BY STATES OF ORIGIN*

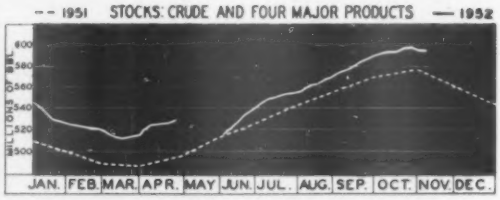
(Thousands of barrels)

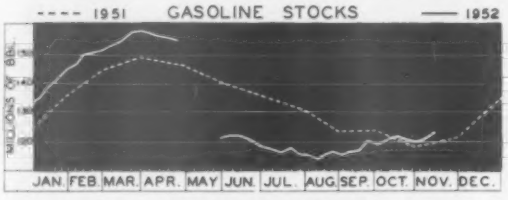
	Nov. 8, '52	Nov. 1, '52	Nov. 10, '51
Pennsylvania Grade	2,233	2,198	2,003
Other Appalachian	1,956	1,984	1,546
Illinois, Indiana, Michigan	12,232	12,220	12,812
Arkansas	2,990	2,918	2,743
Louisiana	15,640	16,162	14,463
North	2,402	2,567	2,921
Gulf	13,238	13,595	11,542
Mississippi	3,391	2,993	3,472
New Mexico	7,319	7,578	7,187
Oklahoma and Kansas	38,431	37,866	41,014
Texas	129,830	129,891	126,120
East Texas proper	11,890	12,393	(†)
West Texas	58,793	59,040	(†)
Texas Gulf	26,159	26,186	(†)
Other Texas	32,988	32,272	(†)
Rocky Mountain	14,958	15,120	15,020
California	31,017	31,594	28,798
Foreign	7,702	8,011	6,024
Total	267,699	268,535	261,202

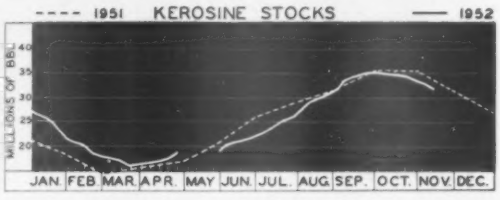
*Bureau of Mines. †Not comparable with current week.

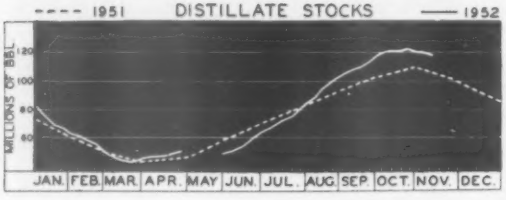


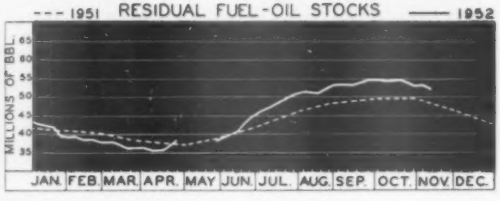










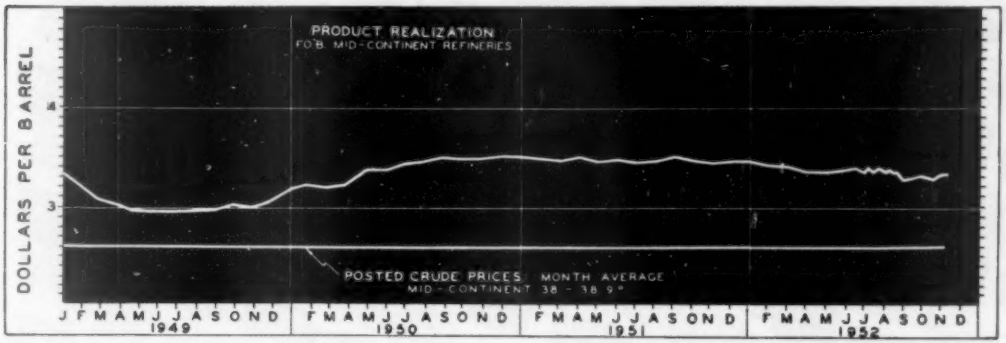


A.P.I. REFINERY REPORT, NOVEMBER 15

(Thousands of barrels)

District—	Daily avg. runs	Daily average production: Gaso.*	Kero.	Dist.	Resid.	Stocks‡: Gaso.†	Kero.	Dist.	Resid.	Bureau of Mines, November 1951: Daily avg. runs	Daily average production: Gaso.*	Kero.	Dist.	Resid.
East Coast	1,079	446.7	23.1	291.6	249.4	30,482	14,650	43,008	11,842	1,022	402.5	46.9	279.8	232.3
Appalachian:														
District 1	99	43.6	6.9	18.6	13.6	3,782	530	1,685	698	103	44.1	5.6	16.4	14.1
District 2	87	42.7	9.4	16.9	18.1	1,584	312	671	357	78	34.1	7.0	9.6	17.8
Ind., Ill., Ky.	1,317	704.0	87.8	236.4	186.7	25,865	7,034	22,158	6,222	1,249	671.9	76.9	219.9	186.0
Okla., Kans., Mo.	584	336.3	11.7	141.1	61.6	11,530	1,964	13,492	1,707	508	285.1	17.5	116.7	65.1
Inland Texas	277	192.9	10.9	47.1	41.0	5,140	460	2,482	1,222	242	164.6	12.0	39.2	39.3
Texas Gulf Coast	1,807	840.3	141.8	455.2	256.3	17,963	3,486	14,785	7,523	1,570	727.6	139.0	347.0	252.3
La. Gulf Coast	490	235.9	43.3	121.4	48.6	6,393	2,446	4,881	1,899	530	232.8	74.3	109.8	59.9
N. La. and Ark.	75	30.6	6.0	16.9	6.0	2,680	641	954	270	80	34.0	7.7	16.9	7.3
Rocky Mountain:														
New Mexico	18	11.1	0	2.9	3.9	141	0	63	93	17	10.2	.5	2.2	3.7
Other Rocky Mtn.	228	110.0	7.6	40.7	42.1	3,257	391	2,120	976	219	105.9	8.8	41.0	47.7
California	1,035	430.7	4.6	168.1	308.6	14,496	333	12,849	19,133	991	417.0	6.6	159.0	378.2
Nov. 15, 1952	7,096	3,424.8	353.1	1,756.9	1,235.9	123,313	32,247	119,148	51,942	6,609	3,129.8	402.8	1,357.5	1,303.7
Nov. 8, 1952	6,860	3,352.1	387.6	1,482.3	1,211.1	121,374	33,383	120,146	53,602					
Nov. 17, 1951	6,616	3,159.2	400.3	1,384.0	1,343.3	120,644	35,097	107,052	49,589					

*At refineries including natural blended. †Finished and unfinished. ‡At refineries, bulk terminals, in transit, and in pipe lines.


PRODUCT REALIZATION
F.O.B. MID-CONTINENT REFINERIES
DOLLARS PER BARREL
4
3
POSTED CRUDE PRICES: MONTH AVERAGE
MID-CONTINENT 38 - 38.9°
J F M A M J J A S O N D
1949
J F M A M J J A S O N D
1950
J F M A M J J A S O N D
1951
J F M A M J J A S O N D
1952

In this trend chart refinery realization is based on average Mid-Continent grade crude oil (not 38° gravity only) and average prices for refinery products as published in The Oil and Gas Journal basis Oklahoma (Group 3). Refinery yields confined to gasoline, kerosine, distillate and fuel oil. Realization averaged $3.35 for week ended November 8, $3.35 for previous week, and $3.48 for November 1951. The above trend information is based on volumes and current prices and therefore does not reflect changes in operating costs.

REPRESENTATIVE QUOTATIONS

Representative spot-market quotations of leading suppliers as of November 19, 1952. Figures are f.o.b. plant for tank-car shipments in cents per gallon, except for residual fuel oil which shows the price per barrel and wax, in cents per pound.

GASOLINE, KEROSINE, AND FUEL OILS

	Mid-Continent Group 3	New York Harbor (barge)	Texas Gulf Coast
Regular gasoline, 80-82 octane	10⅜-10½	12.125-12.75	10¾-11
Premium gasoline, 86-88 octane	11⅜-11½	13.25-14.0	11¾-12
42-44 w.w. kerosine	8⅝-9	10.45-10.65	9
No. 2 straw fuel oil	7¾-8	9.45-9.65	8-8.25
No. 6 residual	$0.85-1.00	$2.00-2.25	$1.50-1.75

NATURAL GASOLINE

	Group 3	North Texas	N. La.
Grade 26-70	6⅞	6¾	6⅝
Grade 18-55	8.25	7.75	8.0

LUBRICATING OILS
South Texas

200 vis., No. 2-3 neutral	13-13.5
750 vis., No. 3-4 neutral	16
2,000 No. 5-6 neutral	18-19

LUBRICATING OILS
Mid-Continent

150-160 vis., D bright stock, 0-10 pp.	25-27
200 vis., No. 3 neutral, 0-10 pp.	13-15

Western Pennsylvania

145-155 vis., 10 p.t. bright stock	31.5
180 vis., 0 p.t. neutral	30.5

WAX
Mid-Continent

132-134 A.M.P.	5.5

SCATTERED price cutting in wholesale and retail sales continues to plague the gasoline market, particularly in the Middle West and part of the Rocky Mountain area. Some observers state that the extent of this price cutting is not fully realized because it has expanded slowly in recent weeks without being reflected in spectacular price wars in some larger cities.

The development centers in the sales from product pipe-line terminals and refineries located within the areas in which this condition exists. In the case of pipe lines, the seller in effect is giving to the jobber and the jobber to the dealer a substantial part of the transportation saving brought about by the use of product lines. Some companies, forced to meet competitive conditions, are participating in these markets with whatever price concessions are necessary without changing the posted tank-car prices for gasoline at their refineries in the Mid-Continent and other points.

Colder weather in the northern areas brought more orders for distillates and kerosine last week and sellers were hopeful that these markets, which have been generally sluggish, would turn firm with possibly generally higher quotations within another 15 to 30 days.

At interior points the No. 6 residual market is slow and prices reflect weakness. While most sellers are maintaining a price of 85 cents to $1 for No. 6, basis Group 3, distress spot sales under the low have been reported at scattered points over the past week. Largely the same situation exists at the Gulf Coast.

In the eastern areas some improvement is noted in the movement of kerosine and distillates with fewer sales under the going market reported in the New York Harbor area. The price range in New York Harbor in barge movement for 42-44 kerosine is 10.45 to 10.65 cents with sales of No. 2 ranging up from 9¼ cents.

CRUDE PRICES

GRAVITY SCHEDULE

	Signal Hill, Calif.‡	Okla-homa, Kansas	Gulf Coast Tex.*	West Tex.†
18-18.9	$1.93			
19-19.9	1.98			
20-20.9	2.03	$2.25		$2.12
21-21.9	2.07	2.27		2.14
22-22.9	2.12	2.29		2.16
23-23.9	2.18	2.31		2.18
24-24.9	2.24	2.33	$2.56	2.20
25-25.9	2.30	2.35	2.58	2.22
26-26.9	2.36	2.37	2.60	2.24
27-27.9	2.41	2.39	2.62	2.26
28-28.9	2.46	2.41	2.64	2.28
29-29.9	2.52	2.43	2.66	2.30
30-30.9	2.57	2.45	2.68	2.32
31-31.9	2.62	2.47	2.70	2.34
32-32.9	2.68	2.49	2.72	2.36
33-33.9		2.51	2.74	2.38
34-34.9		2.53	2.76	2.40
35-35.9		2.55	2.78	2.42
36-36.9		2.57	2.80	2.44
37-37.9		2.59	2.82	2.46
38-38.9		2.61	2.84	2.48
39-39.9		2.63	2.86	2.50
40 and above		2.65	2.88	2.52

*For crude from Daboval, El Campo, and Sand Point.

†Includes Lea County, New Mexico.

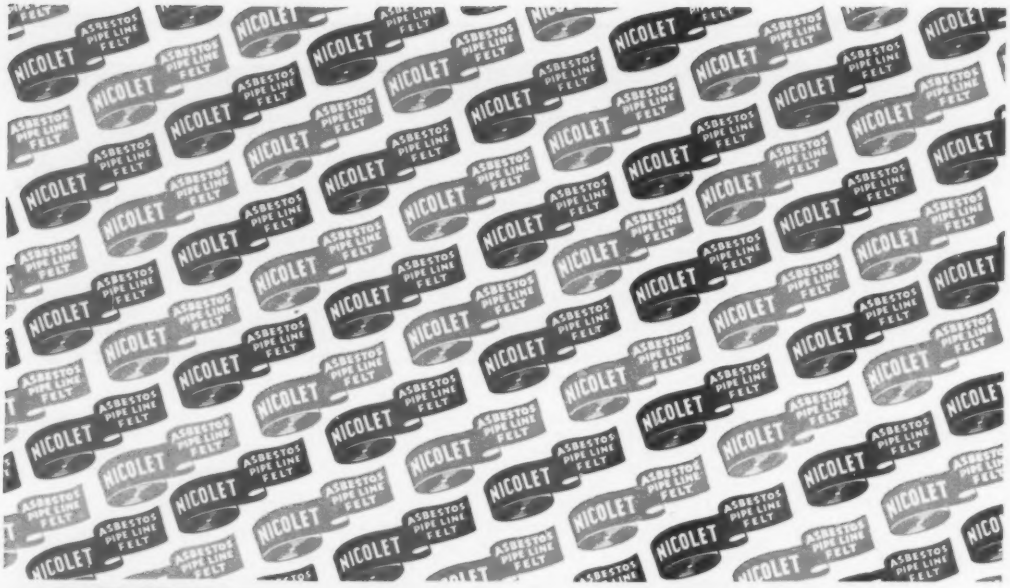
Last general price change represented a 50-cent increase, effective December 6, 1947.

‡Standard Oil Co. of California.

FLAT CRUDE PRICES

Representative posted schedules per barrel. Kettleman Hills, California*	$2.80
Louisiana:	
Beauregard Parish	2.60
Cotton Valley (distillate)	2.85
Cotton Valley (crude)	2.70
Texas:	
East Texas	2.65
Pecos County (Yates)	2.35
Conroe	2.83
Van	2.48
Pennsylvania Grade:	
Bradford	4.25
Southwest Pennsylvania	3.82
West Virginia	3.76
Illinois Basin	2.77

*37°-37.9°.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October Drilling Ahead of September

by John C. McCaslin

DRILLING activity picked up considerably in October with operators in the United States completing 3,792 wells, up 9 per cent over September's low figures. Successful oil wells were up 8 per cent over the previous month, while dry holes completed rose above September's figures by 187 wells. The biggest gain percentagewise for the month was the 11 per cent rise in footage drilled.

Cumulative 1952 completions stand at 38,555 wells, up 5 per cent over last year. Cumulative oil-well completions are up about 2 per cent over last year, while gas wells and dry holes are both up, 9 and 7 per cent, respectively. Cumulative footage drilled so far this year by the industry totals 157,971,885 ft., up 12 per cent over last year.

The trend in deeper drilling continues as operators add to the cumulative total of deep wells. In the over-12,500-ft. classification a total of 287 wells have been completed to date this year, up 50 per cent over last year. Wells completed in the 10,000-12,500-ft. class show a 28 per cent gain over last year. A 44 per cent gain over last year is noted in the 7,500-10,000-ft. class. Wells drilled under 2,500 ft. show the only drop from last year's figures. In West Texas, particularly, a trend toward deeper drilling in and around older producing areas is reported.

Increased activity in the Anadarko basin, Williston basin, and the movement of drilling towards the center of the Rocky Mountain basins is the major factor in the upsurge of wells being completed in the deeper classifications. Deeper drilling in Oklahoma is expected to continue increasing as new productive areas are uncovered in the important wildcat areas of the Anadarko basin. The rising importance of Ellenburger production in West Texas is adding new records continuously to deeper depth classifications.

Recent discoveries in California in the Sespe and Eocene formations have set off a wave of deep drilling in that state. During the month operators began 13 wildcats in the deep-depth classification. A number of deep wildcats are being drilled in Tulare, Colusa, Ventura, and Santa Barbara counties. October was a record month in California for projected deep tests.

SUMMARY OF COMPLETIONS, OCTOBER 1951

	Total comp.	Oil	Gas	Dry	Under 2,500 ft.	2,500-5,000 ft.	5,000-7,500 ft.	7,500-10,000 ft.	10,000-12,500 ft.	Over 12,500 ft.	Total footage	Rigs and drilling
New York	59	31	0	28	59	0	0	0	0	0	90,200	65
Pennsylvania	157	74	21	62	151	6	0	0	0	0	345,511	170
West Virginia	43	4	33	6	19	20	4	0	0	0	129,006	187
Maryland	3	0	0	3	0	3	0	0	0	0	13,311	6
Ohio	95	35	21	39	54	41	0	0	0	0	202,767	164
Kentucky	99	27	21	51	89	10	0	0	0	0	180,317	178
Illinois	224	81	1	142	96	128	0	0	0	0	557,818	283
Indiana	96	18	1	77	76	20	0	0	0	0	168,993	183
Michigan	65	17	4	44	41	17	7	0	0	0	161,001	112
Kansas	313	140	26	147	43	264	6	0	0	0	1,051,176	454
Nebraska	29	11	0	18	0	18	11	0	0	0	139,280	304
Oklahoma	454	219	33	202	159	206	62	20	6	1	1,594,861	828
Texas	1,408	733	55	620	324	500	370	172	33	9	6,591,341	1,182
N. Central (Dist. 7-B & 9)	464	235	0	229	179	204	79	2	0	0	1,525,090	298
West (Dist. 7-C & 8)	368	258	2	108	36	100	131	78	16	7	2,162,069	343
Panhandle (Dist. 10)	43	19	11	13	4	34	3	2	0	0	157,617	61
Eastern (Dist. 5 & 6)	77	29	8	40	8	26	32	10	0	1	403,247	85
Gulf Coast (Dist. 2 & 3)	215	82	19	114	17	55	68	61	13	1	1,357,220	194
Southwest (Dist. 1 & 4)	241	110	15	116	80	81	57	19	4	0	986,098	201
Louisiana	225	126	15	84	53	29	35	53	43	12	1,514,243	289
North	121	67	4	50	51	24	30	15	1	0	484,484	119
South	104	59	11	34	2	5	5	38	42	12	1,029,759	170
Arkansas	36	10	0	26	7	18	8	2	1	0	164,577	60
Mississippi	27	12					18	2	4	0	189,740	32
Ala.-Ga.-Fla.	9	3	0	6	0	2	6	1	0	0	62,356	8
Montana	48	15							2	0	205,386	80
Wyoming	51	28	1	22	7	25	15	4	0	0	226,244	126
Colorado	49	17	2	30	2	17	28	2	0	0	259,499	67
Utah	8	1	2	5	1	1	6	0	0	0	41,064	33
New Mexico	76	42	21	13	19	18	12	11	10	6	451,927	229
California	198	140	4	54	56	73	45	18	4	2	829,354	261
North Dakota	16	10	0	6	0	3	0	13	0	0	120,098	33
Miscellaneous	§4	0	1	3	3	0	1	0	0	0	9,363	¶8
Total October 1952	3,792	†1,794	268	*1,730	1,275	1,437	645	302	103	30	15,299,433	‡5,068
Total September 1952	3,476	1,660	273	1,543	1,161	1,382	519	300	87	27	13,790,693	4,217
Total October 1951	3,938	2,062	276	1,600	1,373	1,579	633	240	88	25	15,093,277	5,998
Cumulative 1952	38,555	19,990	2,691	15,874	11,979	15,373	6,729	3,050	1,137	287	157,971,885	
Cumulative 1951	36,670	19,417	2,458	14,795	12,342	15,216	5,935	2,108	888	181	140,438,610	
Alberta, Canada:												
October 1952	118	55	9	54	20	47	45	6	0	0	376,556	
September 1952	130	76	14	40	23	57	47	3	0	0	558,629	
Cumulative 1952	1,287	737	105	445	180	524	553	26	4	0	5,460,978	
Cumulative 1951	1,014	651	84	279	108	488	402	15	1	0	4,064,960	

*Incl. 130 service wells: N. Y. 28, Pa. 50, Ohio 6, Ill. 2, Mich. 11, Kans. 5, Okla. 27, Ark. 1. †Incl. 21 condensate wells: Okla. 1, W. Tex. 4, E. Tex. 6, Tex. Gulf Coast 3, S. La. 7. ‡Incl. all wells rigged up and/or drilling at month end. §Incl. Mo. 2, 1 gas, 1 dry, 1,212 ft.; Ariz. 1 dry, 7,211 ft.; S. D. 1 dry, 940 ft. ¶Incl. Mo. 5, Idaho-Nev.-Ariz. 3.

EQUIPMENT MEN . . . in the News

Blackburn to Head Southwest District for Sperry-Sun

E. J. BLACKBURN

Sperry-Sun Well Surveying Co. has moved its Falfurrias, Tex., district office to Corpus Christi, Tex. With this move, E. J. Blackburn, formerly of the Houston district, was promoted to district manager of the Southwest district, with headquarters at Corpus Christi.

Blackburn has been with Sperry-Sun for 6½ years in the capacity of sales engineer. He is assisted by H. J. James, sales engineer, and V. S. Mueck, salesman, in his new location.

Rentals of the Sperry-Sun E-C inclinometer, single shot, K-Monel collars for all of Southwest Texas will be handled out of this office as well as the running of Surwell surveys in cased holes.

W. M. Barnes Adds Cornforth To Executive Sales Post

Robert M. Cornforth has joined the W. M. Barnes Co., Los Angeles, engineers and constructors to the petroleum and chemical industries, as vice president in charge of sales. Formerly, he was manager of sales of Houdry Process Corp., Philadelphia.

Cornforth entered the petroleum industry in 1937 as a chemical engineer with Standard Oil Co. of Indiana. He holds a B.S. degree from the University of Tennessee, an M.S. from M.I.T., and an M.B.A. degree from Northwestern University.

Tulsa Firm to Introduce Gaulin Triplex to Industry

Manton Gaulin Manufacturing Co., Inc., Everett, Mass., has appointed the Tulsa firm of Specialty Sales & Service, Inc., as agents to introduce Gaulin triplex pumps to the oil industry for use in hydraulic pumping, salt-water disposal, and water-flood projects in the oil-producing country.

D. G. Colony, president of Manton Gaulin, and G. W. Eldridge, recently visited the Permian Basin Oil Show, Odessa, where the equipment was first shown.

M. L. Walraven is president of Specialty Sales & Service.

Keystone Tool Announces Expansion of Sales Outlets

C. K. Stillwagon, president of Keystone Tool Corp. of Houston, has returned from an extensive visit through the Rocky Mountain and West Coast states, at which time he arranged for additional sales outlets for the company.

R. J. Eiche & Associates, with headquarters in Los Angeles, were appointed as Keystone representatives in several Eastern states and will maintain sales offices in New York City, Buffalo, Boston, Chicago, Detroit, Cleveland, Cincinnati, and Pittsburgh. These outlets will handle the sales of Keystone Butterfly valves, and other Keystone products to industrial users in the areas they serve.

Stillwagon also announced that Hamer Oil Tool Co., Keystone representatives on the West Coast, with headquarters in Long Beach, has opened new sales and service offices in Ventura and Oakland, Calif.

The company's export representative is R. J. Eiche & Associates, with offices in Los Angeles, and New York City.

Jet-Lube, Inc., Applicator Firm Recently Formed

Jack Ballagh, formerly with Patterson-Ballagh, and Joe and Frank Bergeron have formed Jet-Lube, Inc., to distribute a new applicator for high-speed lubrication of drill pipe, casing and tubing threads. Through use of a newly invented flexible cone, lubricant is applied to the threads through a pressure hose from a drum placed outside the derrick floor. The new company, which has its offices in Los Angeles, also will distribute various types of thread compounds for use with the Jet-Lube applicator.

Cutler-Hammer, Inc. Promotes Brice

M. R. BRICE

Announcement has been made by P. S. Jones, vice president in charge of sales, Cutler-Hammer, Inc., of the appointment of M. R. Brice as division manager, industrial control sales. Brice will have responsibility for the company's industrial control line which deals with the textile, locomotive, pump, compressor industries, and "Unitrol," a sectionalized control center used in a wide range of industries.

Brice joined the Cutler-Hammer engineering department in 1928. He was transferred to headquarters sales in 1932 and then in 1944 became a member of the St. Louis district sales office. In 1946 Brice returned to headquarters in Milwaukee as an industry specialist.

Stewart & Stevenson Transfers Joe Rucker

Joe Rucker has been transferred to the sales department of the Odessa, Tex., branch of Stewart & Stevenson Services, according to Joe Manning, vice president and general manager of the company. Rucker will specialize in oil-field engines and irrigation equipment.

Formerly a member of the service department, Rucker has been with Stewart & Stevenson since the opening of the Odessa branch early in 1952.

Massey Made West Texas Representative for Rolo

J. W. MASSEY

J. W. Massey, Jr., formerly associated with Ray S. Kail as representative of Rolo Manufacturing Co. in South Texas, has been moved to Midland, Tex., by Rolo, and he will headquarter in Midland.

Massey will handle sales and service for the West Texas and New Mexico area for Rolo wellcheckers and Rolo oil-well metering systems.

CLASSIFIED —ADVERTISING

Your MARKET PLACE FOR THE OIL AND GAS INDUSTRY...

UNDISPLAYED CLASSIFIED 20c a word one issue. 10% Discount three or more consecutive issues. $4.00 minimum charge. Blind Box in our care nine words. Payable in Advance.

DISPLAY CLASSIFIED
$14.00 a column inch one issue . . .
10% Discount three or more issues.

Address Classified Advertising Material: The Oil and Gas Journal, P. O. Box 1260, Tulsa 1, Okla.

EQUIPMENT FOR SALE

SALES and rentals of cable drilling and fishing tools, casing and equipment, from the Southwest's largest stock of used cable tools and oil field supplies. Degen Pipe and Supply Co. Tulsa, Oklahoma

NOW working in South Texas area, Cardwell "Mobilhoist" double-drum workover rig powered with Waukesha gas-gasoline 6 MZR engine. 5000' Rig complete with 5000' $\frac{5}{8}$" swab line, 1" drill line Brewster 50 ton three sheave block and hook, 7" x 5½" double telescoping 55' pole. Complete with O.C.T. packoff for 2" and 2½" tubing, substructure, hand tools, weight indicator, etc. Less mud pump. Price $6500.00. Box G-167, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE: 6 (six) Type 80 Cooper Compressors. Good Condition. Alfred B. Kern, 223 Wright Bldg., Tulsa, Oklahoma.

FOR SALE: 40,000 ft. #1 3½" O.D. standard plain end line $0.55 per ft. 20,000 ft. 4" O.D. flues. Rogers Pipe and Supply Company, Phone 5-8850, Tulsa, Oklahoma.

Gaso Duplex 4½" x 6" Power Pumps with Chrysler C-36 Engines, skid mounted, immediate delivery. Also Byron Jackson, Carter Centrifugal Units. Westinghouse 20-25-50 KW Generating Units.

H. H. COFFIELD
Attn.: W. H. ORR
Phones: 132—Rockdale, Texas
AT-3427—Houston, Texas

IMMEDIATELY AVAILABLE

HEAT EXCHANGERS AND CONDENSERS

1—Downington—R 116A—24" dia. x 11'6"
1—Downington—R146C1—20" dia. x 11'6"
3—Heat Transfer — Size 12 — 90 Type 1-32-51H
Shell & Tubes—Max. Pressure 125# 600°
2—ALCO—Size 18 — 168 Type 1-34-42H
Shell—Max. Pressure 150#—250°
Tubes—Max. Pressure 150#—150°
2—ALCO—Size 14—168 Type 2-32-41H—
Shell—Max. Pressure 300#—300°
Tubes—Max. Pressure 150#—150°
20—Heat Transfer—Vertical Exchangers various sizes—Steel and Admiralty Tubes.

PUMPS

9—Rumsey Triplex Pumps — 5½x10 — Complete with 15 H.P. G.E. motors, controls and starting equipment
2—National Transit Pumps — 7½x5 — 10 H.D.P.
2—Gould Pumps Size 10 with 75 H.P. G.E. motor
3—Worthington Duplex Steam Pumps—
1—6' x 4' x 6'
2—7½' x 5' ½" x 6'

CHECK VALVES

8—30" W.K.M. Cast Steel Check Valves, Hastelloy "B," stainless steel trim. BRAND NEW.

CARDWELL AUTOMATIC PIPE TONGS
60—6" to 30". All Brand New.

J. C. BERKWIT & COMPANY
551 Fifth Avenue • New York 17, N. Y.
Phone: MUrray Hill 2-2214

EQUIPMENT FOR SALE

WELL drilling equipment, new or used Spudders, rotaries, core & shot hole drills tools, pipe, bits, blocks, pump jacks, valves Everything for well drilling and service Fishing tools rented. Pressey & Son, Pueblo Colo.

FOR SALE at Oklahoma City a large quantity of 3", 4" and 6" line pipe couplings and 7" 17# casing couplings. Contact T. P. Mace there or write Cities Service Oil, Patridge, Bartlesville, Oklahoma.

ENGINES & PUMPS: General Motors, gas or butane, 400 HP 900 RPM. 1 Worthington Triplex, 120 GPM, 3¼ x 6 High pressure with 40 HP electric motor. 5 Triplexes 2¾ x 4, 600#, 18 GPM. **DUPLEX POWER PUMPS:** 7 National Transits 4 x 6—1500# WP. 1 Wheatley 4 x 6 DC to Waukesha Engine 1400# WP. 1 Gardner-Denver 5 x 10 Waukesha Engine.

GENERAL MACHINERY & EQUIPMENT CO.
Phone Vi. 0018
805 Woodland Kansas City, Mo.

EQUIPMENT FOR SALE

GAS METERS FOR SALE. Westcott, Foxboro and Emco. Good condition. Geo. R. Milner, Box 124, Okmulgee, Oklahoma.

FOR SALE

MODEL 1050 IDECO RIG

Powered With

Three G-M Twin Diesels

136 Ft. Lee C. Moore, Heavy,

Wide-Base Mast

4½" Grade E Drill Pipe with Hard Bands Drilled Four Gulf Coast Wells.

Rig is Complete and in Good Condition.

Write Box G-166, The Oil and Gas Journal, Tulsa, Oklahoma

COPPER TELEPHONE WIRE

30,000 pounds #9 B & S bare copper wire. Reclaimed in good condition from Interstate Oil Pipe Line Company in coils of approximately one mile. Price 25c per pound, F.O.B. De Queen, Arkansas.

J. E. Wommack

DE QUEEN TELEPHONE COMPANY **DE QUEEN, ARKANSAS**

COMPLETE SEISMOGRAPH EQUIPMENT

12 trace recorder, medium duty chain pull down drill, winch shooting truck, winch water truck, survey pickup with complete surveying equipment. This unit now working for discriminating client but being replaced by all portable equipment for inaccessible assignment. Delivery in 5 days **$15,000.00**

One complete standard 24 trace S.I.E. Recorder now working but being replaced by portable. This unit is just like new. Delivery in 10 days **$15,500.00**

PURCELL EXPLORATION SERVICE **WICHITA FALLS, TEXAS**
1629 Tenth Street **Telephone 25473**

FOR SALE

Ingersoll-Rand Type 2XVG1, 75 H.P., Heavy Duty, Direct Connected 4 cycle, Gas Engine driven, Single stage Gas Compressor.

Power cylinders 2—11 in. dia. x 12 in. stroke
Compressor cylinder 1—12 in. dia. x 12 in. stroke

Complete with starting air compressor and automatic appurtenances, capable of handling 875,000 cu. ft. per day.

Purchased in September 1949, completely new, and in good operating condition. Also meters, runs, drips, heaters and other equipment necessary for small gathering system.

ROOSEVELT OIL AND REFINING CORP.

P. O. Box 271 **Mt. Pleasant, Michigan**

EQUIPMENT FOR SALE

3500' OF 3½" BOTTLENECK Drill Pipe 3600' of 3½" Internal Flush External Upset Drill Pipe. All above pipe Sonoscoped 70% #2 30% #3. Also 4600' of 4" OD 14# R2 Sml Drill Pipe w/ 5¼" OD Tool Joints. Milford Giffin, Tel. 477, Hoisington, Kansas.

2 FAILING Model 1500 drills, shop number 966 mounted on KBS-7 1947 International truck, shop number 909, of special design mounted on GMC 6 x 6. Both drills in good condition and reasonably priced. Write for prices and list of equipment. Box G-193, The Oil and Gas Journal, Tulsa, Oklahoma.

BUCYRUS ERIE 36-L Spudder complete, excellent condition, Serial #44327 with L.O.-525 Buda natural gas-gasoline engine. Also Used Casing & Tubing. The Sandy Supply Co., P.O. Box 123, Wooster, Ohio.

FOR SALE: 2—Like New 50 KW Natural Gas or Gasoline Power Plants; Used Less Than Six Months, New in 1947; Under Reg. Maint. Engines—Climax "Blue Streak" Model R81. 62.5 KVA, 50 KW at .8 P.F. G.E. 127/220 3 60, 600 RPM.

GEORGE STEINER CO.
1220 W. Lake St. Chicago 7, Ill.
Taylor 9-0589

FOR SALE OR TRADE
4" LINE PIPE
100,000 Feet NEW AND USED
For Immediate Delivery, Subject to Prior Sale
Or Will Trade for Oil Well Casing or Line Pipe—6" through 18"
Also Have Complete Stock Other Sizes of Pipe and Tubing—⅛" through 36" O.D.
Tell Us Your Needs
Wire, Write or Call — J. M. Hauck

VALLEY STEEL PRODUCTS CO.
124 Sidney St., St. Louis 4, Mo.
Phone: Laclede 2100

EQUIPMENT FOR SALE

PIPE
All sizes; line pipe and casing, tanks, and Oilfield supplies. Edco Pipe & Supply Co., Phone 45970, P.O. Box 151, Tulsa, Oklahoma.

1 Oilwell Steam Pump, 16¼ x 7¾ x 20" 1 Gardner-Denver Steam Pump, 18 x 8 x 20" Both pumps are in excellent condition, may be seen at Makin Drilling Company Yard, Hobbs, New Mexico. MAKIN DRILLING COMPANY, Box 1628, Hobbs, New Mexico.

FOR SALE: 1—Super D Spudder, powered with 100 horse International engine. Equipped for Butane, all tools complete, from 15" on down. This rig is now on location near Fruita, Colorado. Price $9000. Send all inquiries to: Mr. R. Mitchell, Room 206, Claypool Hotel, Indianapolis, Indiana.

FOR SALE: 25,000' 4" o.d. seamless line 45c. 6500' 3½" seamless line 40c. Both double random lengths. 3000' 4½" T & C suitable for casing $1.10. M. J. Regan, Coffeyville, Kans.

FOR SALE: 2,000 8⅝" O.D. 8 V Thread used recessed collars cleaned priced $1.50 each; 1500 12¾" O.D. Used 8 V. thread recessed cleaned priced $5.00 each, both in excellent condition, will forward samples if desired. A. A. Gilbert Pipe & Supply Co., Shreveport, La.

HUMBLE TYPE

1¼" PRESSURE and TEMPERATURE RECORDERS

2⅜" DRILL-STEM PRESSURE RECORDERS

OIL FIELD RESERVOIR ANALYSIS EQUIPMENT

ENGINEERING PRODUCTS INC.

(Successors to Engineering Laboratories, Inc. BHP Division)
600 E. 41th St. Phone 2-7223
Tulsa 3, Oklahoma

EQUIPMENT FOR SALE

OIL Field Casing. New 5½" and 7" German casing from Houston storage. Immediate delivery. P.O. Box 929, Houston, Texas.

COUPLINGS For Sale: 10,000 6⅝" OD used 8V API line pipe couplings @ $1.25 each, 10,000 8⅝" OD used 8V API line pipe couplings @ $1.50 each, 2,000 10¾" OD used 8V API line pipe couplings @ $6.00 each. F.O.B. Breckenridge, Texas. All couplings clean and in first class condition. Contact Oil Field Salvage Company, P. O. Box 812, phone 232, Breckenridge, Texas.

FOR SALE at our Okla. City Whse.: 60,000' of 4½" OD Used PE Beveled Line Pipe, 25,000' of 3½" OD Ditto 30,000' of 6" Standard PE Used Line Pipe. All Single Lengths. Cities Service Oil Co., Patridge, Bartlesville, Oklahoma.

2 EA. 20,000# Steam per Hr. Hedges-Walsh-Weidner Cross Drum Water Tube Boiler, 3604 HS, built for 200% rating, 262# WP. With steel shell, supports and integral furnace, ready for loading intact. Inspection guaranteed. Perfect, $6,000 ea. FOB Car. 1 Ea. 262-319 HP Kewanee Firebox ASME, 100# $3500. UNITED STEEL PRODUCTS COMPANY, 35-2855, 1534 Texas St., Memphis, Tenn.

FOR SALE: Two WAKU Waukesha's with Twin Disc clutches: One 145GK Waukesha, enclosed and skidded. Each with gas-butane equipment. Manufacturers Distributing Company, Great Bend, Kansas.

FOR SALE
USED REFINERY EQUIPMENT
LOCATED IN MICHIGAN

(3)—2355 Sq. Ft. Vapor Condensers, 125 PSIG.
(2)—1485 Sq. Ft. Vacuum Condensers, 125 PSIG.
(3)—720 Sq. Ft. Condensers, 125 PSIG.
(2)—258 Sq. Ft. Condensers, 125 PSIG.
(2)—440 Sq. Ft. Condensers, 75 PSIG.
(1)—470 Sq. Ft. Exchanger, 250 PSIG.
(2)—1634 Sq. Ft. Exchangers, 150 PSIG.
(1)—394 Sq. Ft. Exchanger, 125 PSIG.
(2)—275 Sq. Ft. Coolers, 125 PSIG.
(1)—819 Sq. Ft. Cooler, 60 PSIG.
(1)—550 Sq. Ft. Cooler, 75 PSIG.
(2)—225 Sq. Ft. Heaters, 125 PSIG.
(1)—Vacuum Flash Tower: Top section contains 5 trays on 27" spacing. I.D. is 9 feet. Bottom section contains 5 trays on 27" spacing. I.D. is 6 ft. (11)—18" Manways on ½" thick shell.
(1)—5' X 17' Sulphur Tank: ⅜" Shell and Dished Heads.
(1)—4' X 12' Distillate Receiver Tank: ⅜" Shell and ½" Dished Heads.
(1)—5000 gal. Emulsifier Pressure Tank, 100 Lbs. complete with coils.
Pumps—Various Capacity and Sizes.

Box G-184
THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

DRILLING EQUIPMENT FOR SALE

Emsco EC Drawworks with hydromatic brake, two automatic catheads.
Emsco J-1250 compound transmission for three engine drive, with pump takeoff pulley equipped with 24" Fawick clutch; air compressor mounted on compound case.
5—Cummins Diesel Engines, Model LP 600, each with 18" double Twin Disc clutch.
2—Emsco Type JA reverse gears.
1—National Rotary 3 speed gear box, equipped with 18" Twin Disc clutch.
1—Steel skid base for three engines, 18" high.
1—Steel base for Emsco Reverse Gear.
Equipment may be inspected at our yard at 3465 Cherry Avenue, Long Beach, Calif.

THOMAS P. PIKE DRILLING CO.
417 South Hill Street Los Angeles 13, California

USED DRILL-PIPE FOR SALE

804 Jts. approx. 24,924 ft. used 3½" O.D. 15.5# Range 2 with Hydril Joints,
45 Jts. approx. 1,295 ft. used 3½" O.D. 15.5# Range 2 with Hydril Joints,
73 Jts. approx. 2,294 ft. used 4" O.D. 15.5# Grade D Range 2 with Reed Double Streamline Joints.
99 Jts. approx. 3,065 ft. used 4½" O.D. 16.60# Left Hand Range 2 flush Jt.

To be sold on Individual Bid Basis—"As Is." Bids close December 8.

Also for sale approx. 160 misc. makes 4 and 6 cyl. pumping gas engines all in running condition when removed from wells, due to electrification.

Also 12" x 12" and 14" x 14" twin drilling engines—14 x 7¼ x 14; and 15½ x 8½ x 20 and 16¼ x 7¾ x 20 Slush Pumps and other misc. drilling equip.

Write—phone—or wire:

STANDARD OIL CO. OF CALIFORNIA
P & S Dept.—Taft, Calif. Phone Taft 5-2111, Attn. P. A. Cline

PIPE LINE PUMPS

2—Type #97802 Byron Jackson Centrifugal Pumps, 4-Stage, 6" x 18" Impellers, 1300 GPM, 900 Ft. Head, 330# Pressure, 45,000 BPD, Mounted on Cast Iron Base for Electric Motor Drive, Good Condition. Price F.O.B. Tulsa, Oklahoma, each $350.00

2—Type #101332 Byron Jackson Centrifugal Pumps, 4-Stage, 6" x 15" Impellers, 730 GPM, 1015 Ft. Head, 375# Pressure, 250,000 BPD, Mounted on Cast Iron Base for Electric Motor Drive, Good Condition, New Spare Parts for Above Pumps. Price F.O.B. Tusa, Oklahoma, each $750.00

1—Practically New Figure #1849, 2½"-x 4" x 6" Gaso Duplex Piston Power Pump, 88 GPM at 350# Pressure, 4" Liners, Powered with 30 H.P. GE Electric Motor 3-60-440, Complete with V-Belt Drive, Mounted on Steel Skid, Unit Used to Test Valves. Price F.O.B. Tulsa, Oklahoma, each $1250.00

H. A. McCarthy
310 Thompson Bldg., Tulsa, Okla.

EQUIPMENT FOR SALE

EMSCO Draw Works, series GA-500, complete with catheads, 2 engine compound, hydromatic, & 2 pump drives. Only drilled 7 or 8 wells, now completely overhauled, present condition virtually good as new. Can be inspected at Taylor Machine Shop, Glen Rock, Wyom. Price $30,000; about 50% new price. Ameera Oil Co., 139 So. Beverly Drive, Beverly Hills, California.

OIL WELL CASING, TUBING, DRILL PIPE AND LINE PIPE. Brand New, Mill Reconditioned and A-1 Used Oil Country Tubular Goods available in any quantities required by end-users and not for resale. GAS CORPORATION, 333 N. Michigan Ave., Chicago 1, Ill.

FOR SALE: Mathey Gas Testing Unit Complete, Mounted in 1948 Chevrolet Aero Sedan. A-1 Condition. Located District Office 2 Miles East of Seminole, Oklahoma. Submit Bids to Deep Rock Oil Corporation, Box 1051, Tulsa, Oklahoma, Attn: Purchasing Department.

2,000' 5½" 14-lb. Casing; 2,500' 2" upset Tubing & Rods; Fairbanks-Morse Motor and Emsco pump unit; 2—210-bbl. tanks. Address Box 245 or Phone 801, Mt. Carmel, Illinois.

FOR SALE: One 36-L Bucyrus-Erie drilling machine, complete with tools. Also 1,940 ft., new 7 inch, 17 lb., H-40, range 2, seamless casing and 2,400 ft. of new 3½ inch 4.60 lb., range 2, J-55 seamless regular tubing. Box E-812, The Oil and Gas Journal Tulsa, Oklahoma

WANT EQUIPMENT: Did you find the equipment you wish to purchase in this column? If not, use an "Equipment Wanted" classified advertisement to find it. It is available somewhere and Journal classified advertisements will find it. See box heading for classified rates, or write The Oil and Gas Journal.

USED PIPE

50,000' 3½" OD 8.38# P.E. D.R. L.W. Used Line Pipe
15,000' 4½" OD 10.79# P.E. D.R. L.W. Used Line Pipe
4,000' 8⅝" OD 24.70# P.E. S.R. L.W. Used Line Pipe
7,000' 18" OD 70.59# P.E. S.R. E.W. & L.W. Used Line Pipe
7,000' 20" OD 65.71# P.E. S.R. E.W. & L.W. Used Line Pipe

Also Tubing & Casing for Sale

Phone or Write

SANDY SUPPLY COMPANY

Wooster, Ohio — Phone 173
Zanesville, Ohio — Phone 2-8766

SURPLUS SHOP EQUIPMENT FOR SALE

1 Lodge & Shipley Hollow Lathe 8⅞" hole, 25" x 16' Motor Driven. Purchased new in 1950.
1 Seneca Falls Engine Lathe 12" swing x 6' bed. Motor Driven Thru Turner Unit.
1 Bridgeport 8" Hole Hollow Spindle Lathe. 52" Swing, 16' bed. Motor Driven Thru Turner Drive.
1 Smalley General Thread Miller, 2 Motor Driven.
1 15" R. A. Kelly Co. Shaper Motor Driven thru transmission.
1 21" Champion Post Type Drill Press, Motor Driven.
1 400 AMP Lincoln Electric Welder, 220 Volt, 60 Cycle, 3p Motor Driven.
1 Kalamazo P45 Band Saw, Motor Drvn.
1 Buffalo 14" Post Type Drill Press, Motor Driven.
1 200 Ton Hydraulic Horz. press, 10' inside clearance. Motor driven pump.

This is only partial inventory of available machine & engine shop equipment. Located at our Abilene Branch.

Phone—Wire—Write

EMPIRE MACHINERY COMPANY

Box 4026, Odessa, Texas
Box 1978, Abilene, Texas

EQUIPMENT FOR SALE

1 MODEL 1550-C, 2½X5X10, Gaso Pump. Complete with Mission Valves & Pistons. Ready for use. Will sell for $1,750.00 (⅓ of New Price). 1 International 450 Red Diamond Engine, complete with Radiator, Clutch & Transmission. Total time on Engine 5 hours. Will sell at sacrifice. Delivered price $1,000.00. Write or Phone 2170. Producers Chemical Service, 1404 S. Cedar, Borger, Texas.

EQUIPMENT WANTED

WILL BUY late model used 7¼ x 16 or 7¼ x 18 mud pump. R. Olsen Oil Co., 2811 Liberty Bank Bldg., Oklahoma City, Okla.

WANTED: Used Spudder with tools. Send complete details. M. J. Schroeder, Matamoros 1236, Pte. Monterrey, Mexico.

WANTED: Oil Well Casing, Tubing, Drill Pipe and Line Pipe, new, reconditioned and A-1 Used. Give complete description, price and location. GAS CORPORATION, 333 N. Michigan Ave., Chicago, Ill.

WANTED: Three engine compound for Wilson Titan drawworks. Makin Drilling Company, Box 1628, Phone 3-3141, Hobbs, New Mexico.

WILL PAY highest prices for used casing, used line pipe, abandoned leases, or other surplus lease equipment. Your idle producing equipment is worth dollars. Green Pipe & Supply Co., Box 1383, Tulsa, Oklahoma.

WANTED: Laboratory Equipment, ductility apparatus. Send full particulars to Wisconsin Oil Refining Co., Sheboygan, Wisconsin.

EQUIPMENT NOT IN USE: Did you find a buyer in this column for the equipment you have for sale? Someone wants it and an "Equipment For Sale" classified advertisement in the Journal will find a buyer. See box heading for classified rates or write The Oil and Gas Journal.

HELP WANTED

OIL Industry Employment Service, 405 Tuloma Bldg., Tulsa, Okla. 4-5974. Tom Robinson, owner. For Technical and Trained Personnel, including LPG.

ENGINEERS, Executives, Technical Men. Salaried positions—$3600 to $30,000. This confidential service for outstanding men who desire a change of connection. Will develop and conduct preliminary negotiations without risk to present position. Send name and address for details. Tomsett Associates, 434 Frick Bldg., Pittsburgh 19, Pa.

BUYER

Integrated oil company in Oklahoma has excellent opportunity for qualified applicant. Must have experience in production; also sales experience in heavy equipment would be helpful. College degree, including petroleum and mechanical engineering and some business administration. Age 26-33. All replies should contain salary required and recent photograph. Box G-165, The Oil and Gas Journal, Tulsa, Oklahoma.

CHIEF PROCESS ENGINEER

Progressive, expanding refinery in Houston area desires Chemical Engineer experienced in Petroleum refining to assume duties as Chief process engineer, must be a leader and assume full responsibilities of position. Salary commensurate with experience. Address replies giving experience, salary desired, etc., to Box G-159, The Oil and Gas Journal, Tulsa, Oklahoma.

TECHNICAL WRITER WANTED THE OIL AND GAS JOURNAL

Position is open on editorial staff of The Oil and Gas Journal at its Houston office. Experience necessary in exploration, drilling, oil field operations.

Young man in this position will have opportunity to grow in various divisions of large editorial department. Must have news or report gathering ability, and like to write.

Write letter to P. O. Box 1260, Tulsa, attention managing editor, including details on background, including education, and small photo. The Oil and Gas Journal, Tulsa, Oklahoma.

HELP WANTED

SEISMIC PERSONNEL needed for United States and Canada by well known and expanding contract geophysical company. Address Box E-863, The Oil and Gas Journal, Tulsa, Oklahoma.

INSTRUMENT man with refinery experience to install and maintain instruments, topping, cycloversion, thermal cracking. Box G-154, The Oil and Gas Journal, Tulsa, Oklahoma.

ASPHALT PLANT CHEMIST. Young man with Ch. E. degree desired. Minimum of three years of oil refinery experience essential. Must be capable of assuming responsibility and supervising all laboratory testing for 5,000 B.P.D. refinery located in central Southern state. Salary commensurate with training, experience and ability. Excellent opportunity for right man. Forward personal history and experience data to Box G-156, The Oil and Gas Journal, Tulsa, Oklahoma.

EXPERIENCED Seismologists and Seismic Computers by large, well established geophysical company. Give full details of education and experience in letter. Box G-176, The Oil and Gas Journal, Tulsa, Oklahoma.

TO MEN OF VISION

Individual diligent, conversant with finance, proficient in acquiring substantial producing properties, unitized interests, active integrated companies of merit for equitable purchase and sales; desires affiliation in Oklahoma City or other oil center with aggressive independent producer or operator, limited partnership, resolute group, or closed corporation. Inquiries held in strict confidence. Write Lock Box 1022, Oklahoma City 1, Oklahoma.

THOROUGHLY experienced top to bottom cable tool drillers Rocky Mountain experience preferred but not necessary. Bucyrus rigs. $2.00 per hour, time and half overtime, year-round work for sober trustworthy men. Telegraph or write where can contact will reply immediately. DAKOTA BASIN DRILLING CO., Hot Springs, South Dakota.

REGISTERED professional engineers experienced in evaluation oil and gas properties by major oil company headquarters Tulsa. State experience and qualifications. Box 521, Tulsa, Oklahoma.

THE POSITION YOU WANT: Oil industry companies are looking for men to fill every conceivable kind of position. If you didn't find the position in this column that you are looking for, use a "Situation Wanted" classified advertisement to state your qualifications. Some company is probably looking for your ability. See box heading for classified rates or write The Oil and Gas Journal

SITUATIONS WANTED

MANUFACTURERS AGENT in Permian Basin area will take on additional lines to represent. Extensive contacts and excellent relations in drilling and producing industry. Travel the area continually. Engineering graduate. Box G-180, The Oil and Gas Journal, Tulsa, Okla.

SUPERINTENDENT-PETROLEUM ENGINEER: 15 years experience as a geologist-petroleum engineer, last five years superintendent and manager of oil field operations desires responsible position with reliable company or independent operator. Box G-171, The Oil and Gas Journal, Tulsa, Oklahoma.

DO YOU NEED TOP LEVEL REPRESENTATION IN THE WEST?

We are now contacting top management, executive engineers and purchasing agents for oil refineries, chemical manufacturers and processors, food packers, brewers and bottlers, rock product and metallic and non-metallic mineral mills, atomic energy and government groups. These groups have been contacted regularly for over 25 years, 11 states coverage. If you have equipment or services to sell and need these contacts, for full information, write:

H. L. HEAKIN CO., INC.
1007 Gough Street
San Francisco, California

SITUATIONS WANTED

REFINERY SUPERINTENDENT, presently employed but intend change. Forward looking, cost conscious. Good organizer with past industrial record of interest to small refinery gasoline plant or chemical plant management. Experience covers design, construction, operations and management. Box G-190, The Oil and Gas Journal, Tulsa, Oklahoma.

RESERVOIR ENGINEER: Age 33, 6 yrs. general production, drilling and workover experience plus 2½ yrs. reservoir engineering. B.S. Petroleum Engineering Texas A. & M. College. Desire reservoir engineering position in Gulf Coast Area. Box G-189, The Oil and Gas Journal, Tulsa, Oklahoma.

MAN 38 years of age, 18 years foreign service with major oil company desires employment with reliable oil company refinery in U.S.A. Very extensive refinery experience, present position shift foreman. No college degree. Box G-188, The Oil and Gas Journal, Tulsa, Oklahoma.

GEOLOGIST with Ph.D. and varied experience. Desires domestic or overseas position with consulting contracting firm or smaller company. Box G-187, The Oil and Gas Journal, Tulsa, Oklahoma.

LOOK—1950 B. Sc. geology and mineralogy, Seismograph, gravity meter, magnetometer computor. 4 years experience, 2 in South America. Has acted temporarily as P.C. Speaks Spanish and English. 30 years of age; married to English-speaking Colombian national. Desires position with good opportunity for advancement, preferably in South or Central America. J. H. Smith, Calle 19, #6-28, Apartamento 401, Bogota, Colombia.

LANDMAN, fifteen years experience all phases land lease and title work. Would consider per diem Contract. Locate any area. Excellent references. Box G-192, The Oil and Gas Journal, Tulsa, Oklahoma.

MECHANICAL ENGINEER: Graduate petroleum and licensed Mechanical engineer desires position as chief engineer or assistant chief engineer, small organization with opportunity for participation or growth with company. Age 33. 1½ years with major company. 10 years responsible positions with world wide Engineering and construction organization on design and construction pipelines, refineries, production facilities. Past 1½ years on design major pipelines project, Canada. Particularly interested in prospects with firm expanding into Canadian Petroleum Industry. Box G-191, The Oil and Gas Journal, Tulsa, Oklahoma.

CHEMICAL ENGINEER, M.S., age 38. Texas location, desires responsible position with oil or chemical company. Formerly process engineer, refinery superintendent, independent pipeline contractor. Past 2½ years at pilot plant producing acetylene by partial combustion of methane. Present salary $8900. Box G-172, The Oil and Gas Journal, Tulsa, Oklahoma.

ASSISTANT REFINERY SUPERINTENDENT desires to relocate. 6 years in present position of responsibility for both process and mechanical phases of all refinery operations. Experienced in operation of fluid catalytic cracking units. Chemical engineering graduate, 9 years experience in process development, process design and technical service work for well-known engineering and development organization. Box E-945, The Oil and Gas Journal, Tulsa, Oklahoma.

PURCHASING-Materials-Sales-Office mgt., 18 years experience petroleum and industrial equipment with large oilfield supply company consider any location or foreign. Age 39. Box G-168, The Oil and Gas Journal, Tulsa, Oklahoma.

ACCOUNTANT-EXECUTIVE SECRETARY (female) Graduate accountant. Assistant Secretary-Treasurer of oil producing corporation, being liquidated, desires connection in Tulsa area. Fifteen years experience in petroleum production, two years public accounting. Box G-178, The Oil and Gas Journal, Tulsa, Oklahoma.

ATTENTION: Well established oil well drilling contractor desires to manage and supervise: Individuals', groups', small or medium-sized oil companies' drilling, production and operating problems in Central and Western Texas, and New Mexico. Personal interview by appointment is desired. Makin Drilling Company, Box No. 1628. Ph. No. 3-3141, Hobbs, New Mexico.

SITUATIONS WANTED

POSITION as superintendent, asst. supt. or still foreman: 26 years experience in refining. Six years as supt. and asst. supt. Now employed as startup operator on cattalytic crackers. Box G-173, The Oil and Gas Journal, Tulsa, Oklahoma.

EXPERIENCED in land and contract work, desires connection with oil or drilling company, or selling in related fields. Free to locate anywhere. T. H. Kerlin, 200 Monticello, Odessa, Texas. Phone 7-5606.

THE RIGHT MAN: Can you fill the position you have open from the qualifications listed in this column? Men are always looking for an opportunity to improve themselves. Use a "Help Wanted" Journal classified advertisement to find the men you need. See box heading for classified rates or write The Oil and Gas Journal.

ROYALTIES

WILLISTON BASIN ROYALTIES
Dealers in Montana royalties since 1921, we now specialize in royalties under major company leases in the Montana portion of the Williston Basin. For information on our method of operation, write LANDOWNERS ROYALTIES COMPANY, Box 1225, Great Falls, Montana.

JACK EAGLE—Pay you immediately for your producing royalties and Overrides, absolutely no delay, send complete details 706 City Nat'l Bldg., Okla. City, Okla REgent 6-7027.

REAL ESTATE

GARAGE, GAS STATION, STORE: With 8-room suite; property included; sales $1200 month; rural town; Mobile products; state inspection permit; fully equipped; priced to sell. Apple Co., Brokers, Cleveland, O.

CORPUS CHRISTI, Texas, Office Space for Lease. Highly desirable 945 sq. ft., air-conditioned, 4-rooms in downtown building in which oil companies are located. J. S. Miller, 801 City National Bank Bldg., Phone Central 7471, Houston, Texas.

BRICK Office Building, Air-Conditioned, Fluorescent lighting fixtures, 12 rooms, all plumbing for Paleo Lab., large storage rooms, parking space, convenient location. Staples Street and Craig at Corpus Christi, Texas. $350 month to responsible tenant. Write to E. Grass, 4603 Timon Blvd., Corpus Christi, Texas.

REWARD OFFERED

STOLEN!!! New christmas tree valve from Central Pennsylvania. 10,000# test. Serial No. 51-52-10-1044. Manufactured by Oil Center Tool Company. $500.00 reward information. Box G-124, The Oil and Gas Journal, Tulsa, Oklahoma.

BUILDING SPACE

BUILDING FOR LEASE, Midland, Texas, will construct office building for long term lease. On Highway 80, excellent parking. Floyd Young, Stamford, Texas.

EXPLORATION SERVICE

AERIAL SURVEY PHOTOGRAPHY
READY-MADE—Inexpensive, little-known. Profitable in petroleum exploration, etc. We do the difficult print procurement and research. Particulars free.
WASHINGTON COMMERCIAL CO.
Dept. OGJ, 1300 Fifteenth St. N. W.
Washington 5, D. C. EXecutive 8062

PRODUCTION WANTED

WE WILL BUY
Producing Properties—Any Size

WE WANT
Geologically Sound Drilling Deals
Deal Directly With Us
as principals

BOX G-186
THE OIL AND GAS JOURNAL
TULSA, OKLAHOMA

LEASE AND DRILLING BLOCKS

INDEPENDENT oil company desirous of acquiring additional oil reserves, preferably in Texas. Daily production up to 200 barrels will be considered. Write Rose Lee Oil Corporation, 913 Brown Building, Austin, Texas. Phone 8-9498.

FOR SALE: Bargain — 50,000-acre lease. Joins major company's producing lease. Also three miles from large oil field. Address W. B. Kyle, 1006 Dallas Avenue, Houston, Texas.

I OFFER large timber in Tennessee, worth millions of dollars. Also, oil and gas leases and mineral rights. Low price. John Stouppas, 175 E. Long St., Columbus, Ohio.

WILL pay cash instantly for leases (large blocks), royalties, mineral deeds, production. Write fully—P. O. Box 2153, Denver Colorado.

ACREAGE: New South Dakota wildcat, good geology, title work completed, portion landowner royalty for sale. Commence first test about November 1. For full details, write Box 822, Watertown, South Dakota.

SEE A. L. BOWLES, Ada, Oklahoma, for attractive drilling deals.

ACREAGE FOR SALE: Nebraska Salina Basin Test. Drilling soon. Offset $25., ⅛ mile $15., balance $5. per acre. Excellent Geology. Write or call J. K. Walker, W & M Oil Co., 116 So. 15th, Lincoln, Nebraska.

WE invite inquiries from persons interested in Oil and Gas Leases and Drilling Block, also Mining Deals in Western Colorado. W. C. Catt, Ridgeway, Colorado.

LOOKING FOR A LEASE? There will be over 40,000 wells drilled this year. If you are looking for a lease, drilling block, or drilling deal and haven't found it in this column, or if you have a lease or drilling block you want drilled, a Journal classified advertisement can find an interested party. See box heading for classified rates, or write The Oil and Gas Journal.

SOUTHERN GRAY COUNTY, TEXAS
Approximately 4500 acres solid block semi-proven dolomite production around 3000'. Full ⅞ leases 5 year $1.00 rental. Small cash bonus and little override. Both oil and gas.
COMBEST ROYALTY COMPANY
Amarillo, Texas

DALLAM COUNTY, TEXAS
8000 acres wildcat solid block NEW 10 year commercial leases $1.25 bonus $1.00 rental. Major Companies now leasing in this County.
Combest Royalty Company
Amarillo, Texas

LEASES ROYALTIES
Producing and Nonproducing
Bought and Sold—Any Area
Inquiries Invited
B. D. BUCKLEY
6635 Delmar Ave., St. Louis 5, Mo.

FOR NEW OIL COMPANIES
Can furnish new companies with all necessary properties, including Oil and Gas production, producing royalties and drilling deals of high merit, with reports and appraisals by highly accredited Petroleum Geologists. Also efficient organization to handle field operations. 36 years oil operating experience. Bank references. Correspondence of qualified parties invited.
ARTHUR DAVIDOR
1412 NW 38th St., Oklahoma City, Okla.

Southwest Texas

(Continued from page 181)

State Tract 377, St. Charles Bay, dry, TD 9,105 ft.

Western Natural Gas Co. 70-1 State-Aransas Bay, Aransas Bay Tract, dry, TD 11,178 ft.

Atascosa County: Martin, Shelly & Thomas 1-A C. L. Downey, Noah Scott Sur., dry, TD 3,600 ft.

Texita Oil Co. and Slick Moorman Oil Co., McAda Ranch Sur., dry, TD 1,534 ft.

Forney & Will 1 M. L. Mathews, Atascosa Co. School Lands, dry, TD 1,789 ft.

Bastrop County: Burford Oil Co. 1 Mary Lavina Sanders, Jacob Large Lge., dry, TD 5,227 ft.

Burford Oil Co. 2 Mary Lavinia Sanders, Jacob Large Lge., dry, TD 5,035 ft.

Duval County: J. W. Gorman 1 Mildred & Irene Dubose, J. M. Hinojosa Grant, dry, TD 5,369 ft.

E. J. Pearl & Ralph Rowden 1 John S. Brodovsky, 19 miles northwest Freer, dry, TD 1,903 ft.

Frio County: J. E. Hillier 1 Alec Henson, W. H. Overstree Sur., dry, TD 3,288 ft.

Williamson County: Theo Brinkmeyer & S. M. Messer 1 Dabney & Bass, Hamilton White Sur., dry, TD 1,051 ft.

H. G. Dickinson 1 Theo Schwenke, P. J. Wyche heir Sur., dry, TD 1,075 ft.

Wilson County: J. H. Eddy, A. B. Vaughn and R. Q. McSwane 1 James G. Cone, James Bradley Sur., dry, TD 5,265 ft.

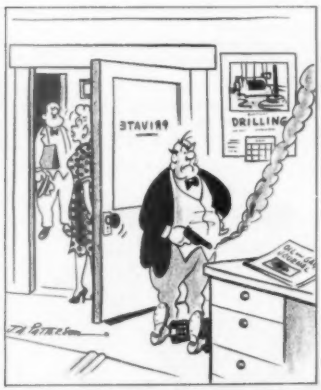
H. H. Howell 2 G. N. Evans, T. Toby Sur., dry, TD 4,757 ft.

San Patricio County: La Gloria Corp. 1 Z. D. Campbell, 2 miles E Taft, dry, TD 9,303 ft.

Zapata County: Hawn Bros. et al 1 Estanislao Flores, W. M. Marks Subd., dry, TD 2,363 ft.

LEGAL

U. S. DEPARTMENT OF THE INTERIOR, Bureau of Land Management, Washington 25, D. C. Notice is hereby given that 60 acres of land, within the known geologic structure of the McAllen field, Hidalgo County, Texas, will be offered in one parcel for oil and gas leasing through competitive bidding to the qualified bidder of the highest cash amount per acre, at 1 p.m., Eastern Standard Time, December 10, 1952, when bids will be opened. Details of the lease offering, how and where to file bids, a description of the lands, and a form of the lease offered may be obtained by addressing an inquiry to this office. Marion Clawson, Director.



"I'll see if he's through with Mr. Himmelwaite yet."

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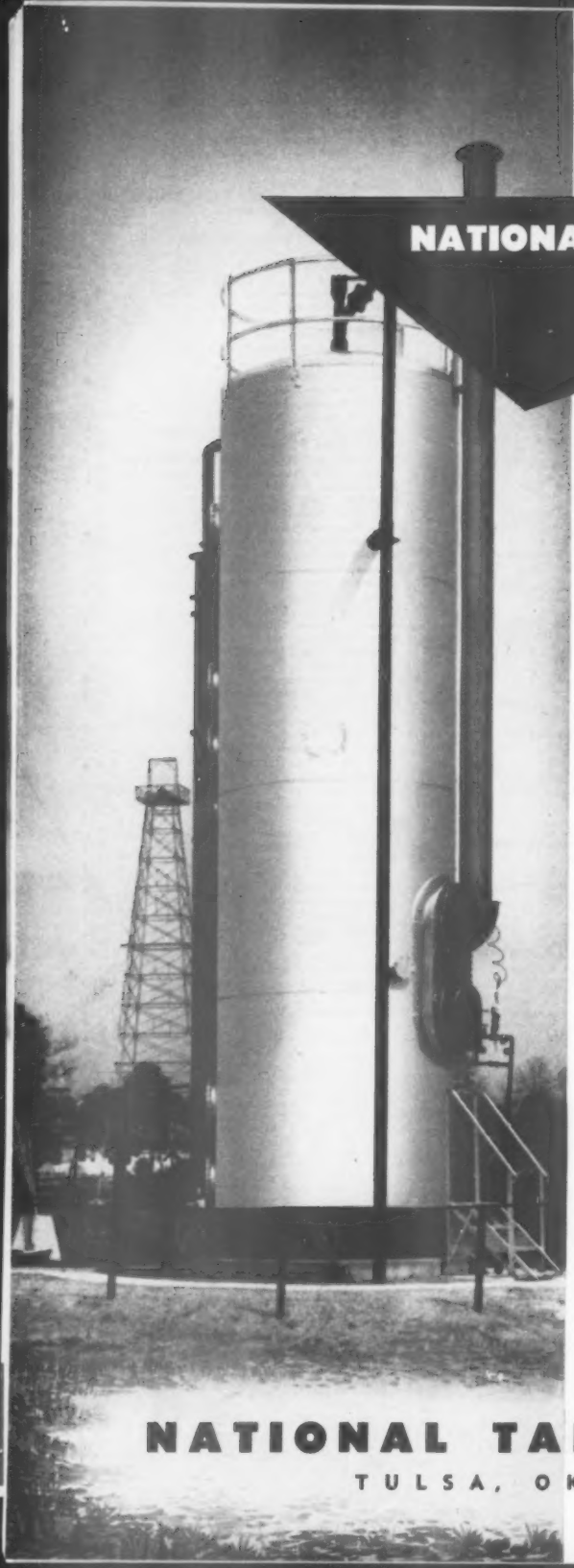
LEGAL

8,232.74 ACRES of Tribal Indian lands and 11,267.26 ACRES of Allotted Indian lands located on the Uintah and Ouray Indian Reservation, Township 3 South, Ranges 1 and 2 West, Uintah Special Base and Meridian Survey, in Duchesne County, State of Utah, are being advertised for oil and gas lease sale, bids on which will be opened 2:00 P.M., December 10, 1952, at the office of Harry W. Gilmore, Superintendent, Uintah and Ouray Agency, Fort Duchesne, Utah. Full particulars may be obtained from the office of the Regional Oil and Gas Supervisor, U. S. Geological Survey, Casper, Wyoming, or from the Uintah and Ouray Agency."

LEGAL

U.S. DEPARTMENT OF THE INTERIOR, Bureau of Land Management, Washington 25, D. C. Notice is hereby given that the SW¼SE¼ sec. 4, T. 2 N., R. 18 E., C.M., Oklahoma, within the known geologic structure of the Hugoton field, will be offered for oil and gas leasing through competitive bidding to the qualified bidder of the highest cash amount per acre, at 1 p. m., Eastern Standard Time, on December 10, 1952, when bids will be opened. Details of the lease offering and how and where to file bids may be obtained by addressing an inquiry to this office. Marion Clawson, Director.



NATIONAL ICP TREATER . . .

SAVES
$731.64 PER MONTH

Inter-Office Correspondence

To: [redacted] Date: April [redacted]

Subject: National ICP Treater
installed on our [redacted] Lease.

Dear Bud:

We thought you might be interested to know of the results obtained from the installation of the ICP Treater on our [redacted] Lease last September.

In figuring the amount of gas purchased for this lease, taking months comparable in weather conditions, six months before and six months after the installation, we find that in the preceding six months we bought gas in the amount of $1,298.99 and in the succeeding six months we purchased gas in the amount of $599.47 a total saving for six months of approximately $699.47 or $133.00 per month.

Before installing this Treater it was necessary that we clean ten tanks per month, losing approximately twenty barrels of oil each time. This would amount to 200 barrels per month or approximately $486.00 per month. This Treater has now been in service approximately eight months and we have not cleaned a single tank.

In addition to the gas and tank cleaning saving we also raised the gravity of the oil an average of 1°, which raised the price of the oil .02¢ per barrel. As this lease averaged 5,632 barrels of oil per month after installation of the Treater the amount gained on raising the gravity amounted to $112.64 per month.

We figure the total savings as follows:

$133.00 per month saving on gas.
$486.00 worth of oil saved each month.
$112.64 more per month for increased gravity.
$731.64 Total saving each month.

The first six months after installing this Treater we had saved $4,395.84. As the Treater cost $3,439.26, at the expiration of six months the Treater was paid for with $956.58 left over as profit.

Respectfully yours,

[redacted]

It's a National

NATIONAL TANK COMPANY

TULSA, OKLAHOMA

Why Burn Down Your House for Roast Pig?

IN ancient China, men ate meat raw. But one day, while Ho-ti the swineherd gathered mast for his hogs, his stupid son Bo-bo, playing with fire, burned down their straw hut. Bo-bo sniffed the odor of burnt pig. He touched one to see if it was still alive, scorched his fingers, put them in his mouth and was amazed at the delicious taste. Father came home and caught his son devouring a pig. Ho-ti tried one, too, found it intoxicatingly sweet and satisfying.

Thereafter, neighbors observed feverish building of new straw huts at Ho-ti's, followed always by conflagrations. The secret leaked and fires became widespread. In a few weeks even his Lordship's town house was on fire. Finally, straw for hut building disappeared from the market and young pigs could not be had for love or money. At last, after many generations, a wise man arose who said that a pig could be roasted without burning down an entire house.

Thousands of years later, we Americans feast deliriously on "roast pig." Accompanying our delights are fires of inflation, which can destroy our values just as certainly as the roasting of Ho-ti's pigs consumed his earthly possessions. But surely we need not await the coming of a sage to tell us not to burn down our houses to enjoy the delights of roast pig!

Let us unite to stop the ruinous flames of inflation. Curb wasteful and unnecessary government spending. Balance our Federal budget. Control our national debt and reduce taxes. Only in this sane way can we produce more straw and enjoy our houses, raise more pigs and eat them, too.

QUALITY YOUNGSTOWN SERVICE

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General Offices--Youngstown 1, Ohio
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MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

RAILROAD TRACK SPIKES - CONDUIT - HOT AND COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RODS - SHEETS - PLATES.

HERE'S YOUR ANSWER TO HARD ABRASIVE DRILLING

***HUGHESET*—the bit that will drill more hole faster in hard, abrasive rock than any known tool!**

A product of Hughes research, the HUGHESET bit has proved itself in scores of West Texas, Oklahoma, Wyoming and Northern Louisiana wells.

In drilling tests in the laboratory (see above), using pink quartzite—four times harder to drill than granite—the HUGHESET bit drilled four times more hole than the previous best hard rock bit.

As seen in the photograph, the HUGHESET bit does not have conventional teeth. Sintered tungsten carbide and forged alloy steel are combined in a unique manner to produce the rugged construction and abrasion resistance of this bit.

Here's a bit that will outperform any other bit you have ever used in chert or hard, abrasive quartzitic formations. It drills faster... stays on bottom longer... and cuts down on those time-killing round trips.

Your local Hughes representative will be glad to advise you as to the conditions under which the HUGHESET bit can be run to best advantage.